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Crude Production Due for Big Decline

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Application of Proration to East Texas Fields Should Soon Show Results. Country Far Over Allotment

By James McIntyre

Lowest daily average crude oil production in the United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

With Texas producing 254,756 bbls. a day in excess of the production allotted to that State by the Oil States Advisory Committee, crude oil production of the United States continued to mount last week, the increase over the previous week having been 38,892 bbls. a day, coming mainly from the East Texas Field.

On May 1 the curtailment of production in the new East Texas fields of Rusk, Gregg and Smith Counties was begun, and it is hoped the production of that area, which exceeded 345,000 bbls. a day in the past week, will soon be down to its allotted 160,000 bbls. a day. This will make a great difference in the trend of the production curve which has been mounting swiftly ever since the large number of drilling wells in that field began, one after another, to hit the rich pay sand.

Notwithstanding the increase in production in East Texas several of the major oil purchasers have maintained a posted price 40 cents higher than the posted price of companies earlier in the field, and in the past week the Tidal Refining Co. joined the Magnolia, Humble and Gulf companies in paying the Oklahoma-Kansas prices for East Texas crude.

Even with East Texas producing 160,000 bbls. a day the Oil States Advisory Committee's allotment of 2,199,000 bbls. to the whole country will be greatly exceeded. Texas and California will be considerably over the allotment unless a change is made in their production policy.

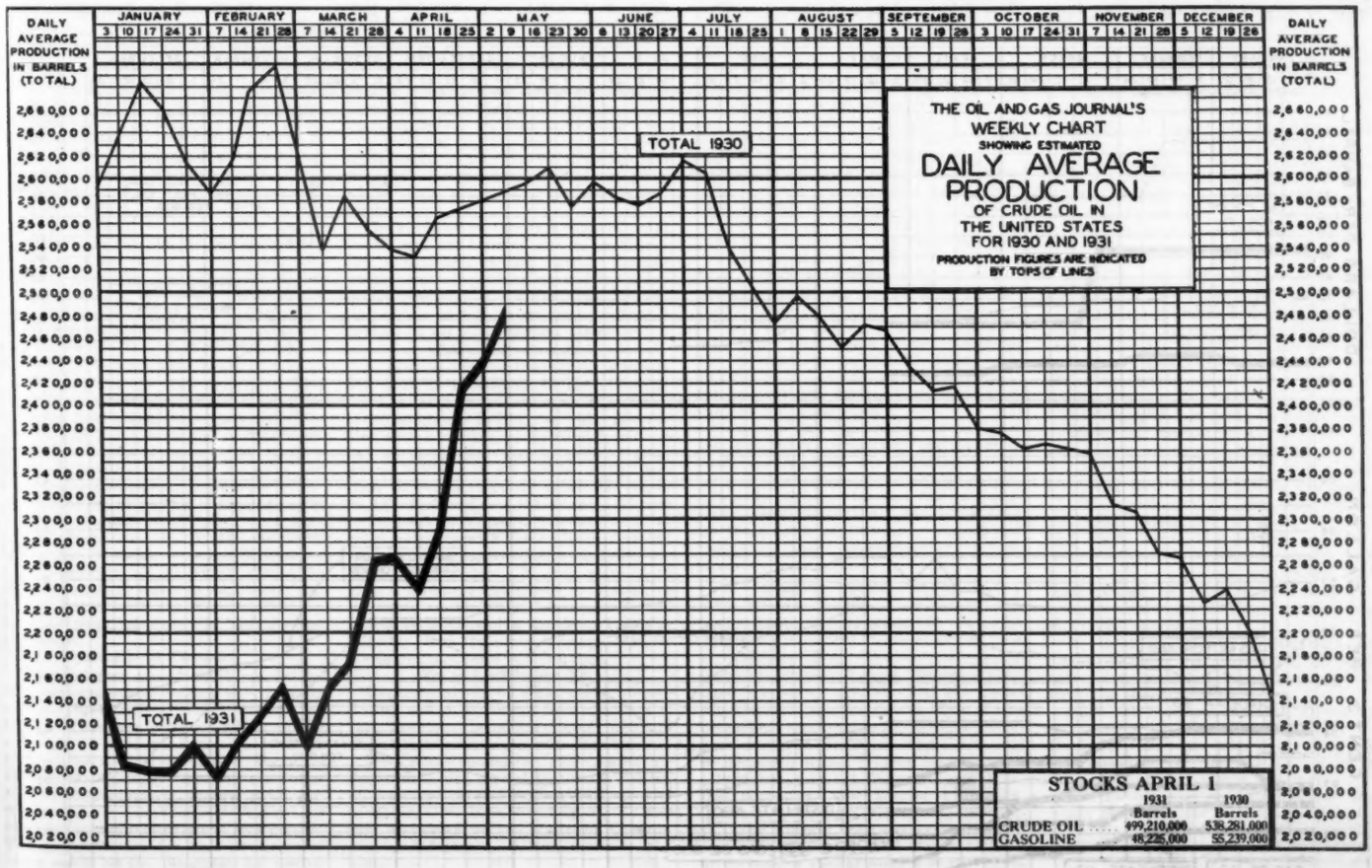
The condition of the refined market is more serious than before, with price cutters upsetting markets in many states. A stabilized crude situation should help steady the refined market, and it is to Texas and California producers that the industry must look for more conservative production, in line with the policy of Oklahoma oil men who are sitting steady in the boat in an effort to improve industrial conditions.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended May 2 and a comparison with the previous week follows:

	May 2	April 25
Oklahoma—		
Oklahoma City	159,535	150,300
Seminole-St. Louis	153,445	155,780
Remainder of State	237,435	238,760
Total Oklahoma	550,415	544,840
West Texas—		
Hendricks	44,943	45,582
Yates	71,858	72,533
Remainder	93,703	101,484
Total West Texas	210,504	219,599
North Louisiana	39,045	39,130
Arkansas	46,860	46,790
North Central Texas	81,918	82,782
Texas Panhandle	56,611	57,260
East Central Texas	396,705	352,248
Kansas	107,325	109,350
Total Mid-Continent area	1,489,383	1,451,999
Gulf Coast	181,293	186 371
Southwest Texas	70,808	70,492
Eastern	110,000	112,000
Rocky Mountain area	97,997	94,727
California—		
Santa Fe Springs	74,000	72,500
Long Beach	87,500	88,750
Playa Del Rey	28,750	29,000
Elwood	35,500	37,000
Ventura Avenue	48,500	44,000
Kettleman Hills	28,000	26,000
Remainder of State	229,000	229,000
Total California	531,250	526,250
Total United States	2,480,731	2,441,839

→ Increase 38,892 Bbls. Daily ←



Awaiting Upturn in Refined Market

Gasoline Prices at Refineries Reduced as Retail Situation Continues Unsettled. Slow Demand for Other Products

By C. O. Willson

The first few days of May, one of the six large gasoline consuming months, failed to bring any improvement in the price situation at Oklahoma and other Mid-Continent refineries. For the first time since the oil business became a major industry of the Southwest, the U. S. Motor grade of gasoline was available the first of the week from a few sources under 3 cents a gallon, basis Group 3. Natural gasolines also continued to sell at the extremely low levels established the last few days of April and the entire motor fuel list regardless of grade was weak.

Other products for the most part are marking time. Spot trading is not active although several refiners report a better movement on contract material including kerosene, fuels and lubricants. Price shading is the rule in the spot business, a buyer of a few cars usually being able to get some seller to lower his quotations regardless of the products required.

Reflect Retail Conditions

The situation in regard to gasoline at refineries appears to be dominated by conditions brought about by changes in the tank wagon and service station end. As explained in these columns last week the introduction of a third low price gasoline in the retail trade at the principal consuming centers in the Middle West and Southwest, is rapidly bringing about conditions which are daily reflected in the refinery tank car markets.

The situation in Tulsa explained last week as typical of conditions in many of the larger towns and cities again furnished another development pointing to conditions which threaten to become general. Ten days ago, when a third grade of gasoline was introduced in Tulsa at 13 cents, or 3 cents under the regular white grade price and 6 cents under the Ethyl premium grades, several of the larger distributors reduced their regular grade to the third grade price, and their premium grade to 16 cents.

Some of the three grade companies met the regular and premium grade reductions and reduced their new third grade 2 cents. On Saturday the two-grade companies again met the situation by reducing their regular white grade to 11 cents and Ethyl Gasoline to 14 cents. Most of the three-grade companies met these prices and in a number of stations a third grade is being offered at 10 cents. All these prices include a 5-cent tax. The "tank car stations" and other price-cut stations have had difficulty in keeping up with the price slicing of their large competitors, but the first of the week most of them were selling at 10 or 11 cents. The position of these operators has become precarious except in cases where they are protected by contracts with their refinery sources of supply. Their gasoline gallonage in some cases has been reduced to a few gallons daily, their customers preferring to purchase the well known branded gasolines when prices are comparable.

Spreads to Lubricants

An interesting sidelight to this situation which may spread is the fact that some of these cut-price stations are now attempting to attract customers by reducing motor oil prices with at least one cut-price operator selling as low as 10 cents a quart. The low prices at refineries for neutral oils and bright stocks makes possible the compounding of motor oils at the lowest prices in years. Some market observers fear this development more than they do the price war in gasoline. Most of the larger distributors continue to sell their regular motor oils at 30 cents a quart, although one major distributor recently reduced to 25 cents. The motor oil business is the most attractive phase of station operation both to the price-cut operators and the large distributors and price cutting in this end would bring disaster to many in the marketing end.

The situation in Tulsa is being duplicated at such scattered points as St. Louis, Detroit, Chicago, Omaha, Lincoln, Dallas and many other cities. Major companies everywhere are not agreed as to the desirability of offering three grades of gasoline and conditions in bulk station and retail markets are declared by many to be in the most chaotic condition that they have ever been with the end not in sight at this time. The three-grade plan is spreading to areas outside the Standard of Indiana territory, where it was first introduced on a large scale. Another interesting development indicating conditions in gasoline merchandising is the action of major distributors in West

(Continued on Page 150)

REFINED MARKET BAROMETER

Refinery prices in all parts of the country were relatively steady the past week. No improvement in conditions was reported in any of the several refining areas but the belief prevailed that quotations on the principal products were near bottom. It continues to be a buyer's market in refinery gasolines and natural gasolines and prices were reduced whenever any changes were made. All grades of motor fuels reflect the unsettled conditions in the tank wagon and service station prices. There has been a seasonal increase in the demand for kerosene with no important changes in prices. Fuel oil demand at interior points slow and market weak. Diesel oil prices reduced at East Coast points. No important changes in lubricating oils with several refiners reporting a better demand. Wax weak.

Mid-Continent—No improvement in refinery gasoline and natural gasoline. Better demand for kerosene. Fuel oils, distillates and gas oils weak. Slow demand for lubricants and wax.

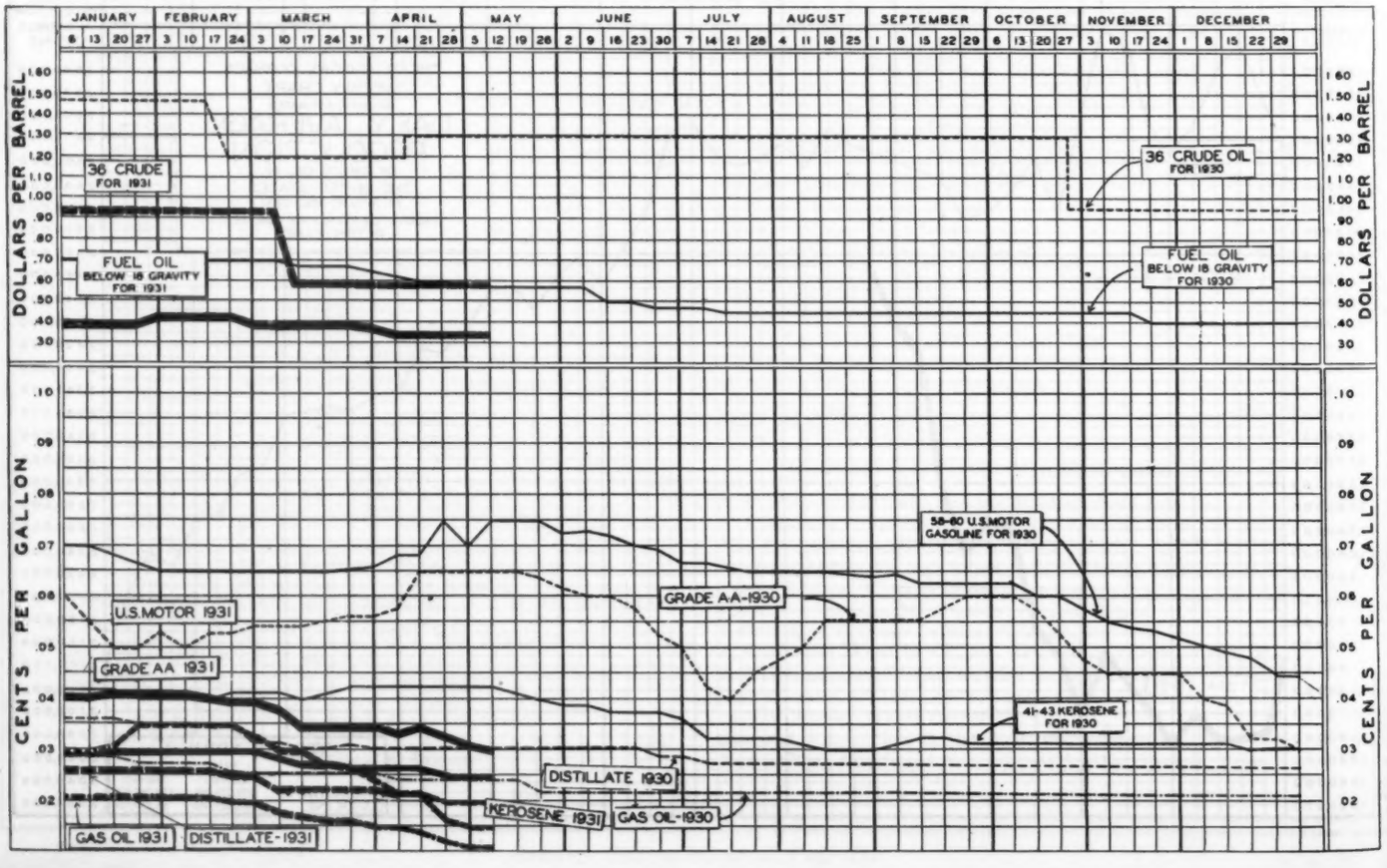
East Coast—Gasoline demand improves but prices at refineries continue to reflect weakness. Diesel oil prices reduced 10 cents following similar reduction in bunker fuel oil of previous week. Seasonal increase in demand for kerosene. Better demand for cylinder stocks.

Chicago—Better demand on gasoline contracts but spot prices continue to decline. Kerosene unchanged. Fuels weak with no important changes in prices.

Gulf Coast—Bunker fuel oil prices reduced 10 cents. Gasoline prices lower. Gas oil freely available. Low crude oil prices in East Texas having depressing effect on refined market.

California—Gasoline market weak with keen competition in retail markets.

Pennsylvania—Fair movement of kerosene. Gasoline slow. Wax prices lower.



Murray Committee Drafts Compact

Avoids Effort of Texas Legislators to Take Control of Governors' Conference Plans. Heated Discussion at Austin

By Special Correspondent

AUSTIN, Tex., May 5.—The Oil States Advisory Committee completed here late Monday night a draft of a proposed interstate conservation pact to be offered all oil states, subject to unanimous ratification and later approval by Congress, for the purpose of harmonizing the proration and conservation of oil and gas throughout the Southwest and West.

The Oil States Committee, under the proposed pact, would serve as a liaison unit with advisory power to unite the efforts of all states toward adoption of the pact and uniform conservation statutes.

Cicero I. Murray of Oklahoma and Warwick M. Downing of Denver prepared the interstate pact draft which was reported back to the legislative conference Tuesday morning. It embodies authority for an interstate oil compact, provided Texas and Oklahoma join it, and would constitute the Oil States Advisory Committee as a legal body. Congressional approval of the compact is asked.

The draft provides for use of present commissions or those created in oil states, and gives the commissions power to prevent waste, prevent discrimination and prohibit drilling. It substitutes power to secure mandatory injunction for obedience to orders instead of present injunctions against orders. The duties of the advisory committee are to investigate and report production, forecasts on needs, imports, advise importers of needed limitations, advise legislatures on needed statutes, and recommend allowables for each state.

The interstate compact would be in force in each state on proclamation by the governor after its ratification elsewhere and approval by Congress.

Outlined by Murray

An outline of the plan was contained in a statement by Cicero I. Murray of Oklahoma, chairman of the committee, which read as follows:

"The Oil States Advisory Committee has submitted a preliminary draft of a uniform conservancy statute with provisos for the formation of a permanent interstate advisory committee and which provides for the duties and powers of said committee, which are to be only in an advisory capacity, to a committee representing the legislative and executive departments of the states for discussion and revision. It invited the assistance of the Texas committee in getting the draft in final form to be reported back to the Oil States Advisory Committee for adoption and submission in its final form to the respective states for their action.

"This draft couples two objectives. The first thirteen sections compose an oil conservation law which would become effective in any state enacting it regardless of whether other states adopted it. The last eight sections comprise an offer for an interstate compact, to become effective whenever two other states pass the act. This compact would place on a permanent basis an Oil States Advisory Committee to make recommendations as to the quantity of oil which should be produced without waste in each state, and to co-operate with the Federal Government to equaling domestic and foreign production.

Details of Compact

"This compact would provide a liaison body between states having substantially similar conservation laws. Among the proposed thirteen sections which would make up the uniform laws, are included prohibitions against waste, requirements for ratable takings, common purchaser provision, prohibitions against price discriminations by purchasers, provisions for equitable proration in time of overproduction, authorization for unit development and a novel clause, presented for discussion, which would regulate unnecessary drilling.

"In presenting this draft, Warwick M. Downing of Denver, chairman of the legal subcommittee, and Cicero I. Murray, chairman of the Oil States Advisory Committee, emphasized the fact that the tentative draft was submitted at the request of the Texas committee and only as a contribution toward the solution of the problems confronting the legislatures of the oil-porducing states represented on the committee. It is expected that helpful criticism will be offered by the Texas group, after which it will be submitted to other legislative committees in other states for similar action and comment prior to introduction in any legislative body or formal adoption by the Oil States Advisory Committee. The comments of the oil industry and all others interested generally will be asked."

Up to Congress

Congress will be asked to ratify the pact if it is deemed necessary. The other states can enact the statutes as their legislatures meet, some not to convene for two years or more. Each state is autonomous under the proposed plan and is privileged to select its member of the proposed advisory committee in any manner it sees fit, appointment by the governor, selection by the legislature or otherwise.

A cohesive organization to limit combined production to market demands and thus stabilize the industry and the price fabric, is the objective of the statute and compact.

The proposed statute is a symposium of the oil and gas laws of Texas, Oklahoma and California, which would prevent waste, control production and do other things necessary to conservation. The object of the pact is to get them uniformly applied in all oil-producing states.

Oklahoma's Promise

A promise was made that Oklahoma will hold its production to the allowable fixed in any compact among the states, provided others do likewise. Mr. Murray also said proration is necessary to save the marginal wells and to prevent great waste. Without it, oil will be sold at less than 25 per cent of its value. He urged co-operation and not the creation of new committees or organizations to work at cross purposes with those already created and operating successfully, such as the advisory committee. If each state is to have a different conference or committee it would mean that nothing effective would be done and a breakdown of the industry with financial damage for the whole country, said Mr. Murray.

Texas Legislature Acts

Representatives of eight other oil-producing states, including four members of the Arkansas legislature met with the Texas legislative committee Monday.

The Texas committee was created under a resolution passed by the legislature. It consisted of five representatives, four senators, Gov. Ross Sterling, C. V. Terrell, chairman of the Railroad Commission and James A. Allred, attorney general.

There was considerable discussion over what was the purpose of the meeting. Some members of the Oil States Advisory Committee took the position that the effort of the lawmakers might duplicate the work of that committee. Texas and Arkansas legislators replied they wanted to hear recommendations of the advisory committee but that proposed laws would stand a much better chance of being enacted if proposed finally by lawmakers rather than outsiders.

Monday's Meeting

The Texas legislature's effort to shift control of the interstate compact and uniform proration law from the governors' committee to legislative groups failed when the Arkansas legislature alone joined the Texans, and governors' Oil States Advisory Committee members from the other states put in appearance. The legislative joint group, after Texas was blamed for the threatened collapse of proration, agreed to wait for the proposed draft by the Oil States Committee as the basis of its work.

Senator Thomas Pollard was the author of a resolution creating the legislative committee, adopted after Governor Sterling had named R. R. Penn, proration chaiman, as his advisory representative and had asked passage of a proposed uniform law to put proration in the hands of a new commission.

Cicero I. Murray, Gov. W. H. Murray's personal representative from Oklahoma, invited the legislators to give their help to the governors' advisory group, and told the meeting the proposed laws could not be secured in two to four years. "Better take advantage of whatever the advisory group can do to keep the industry from collapsing," he suggested.

The Texas legislative group was told that many legislatures have adjourned. The Arkansas group joined Texas lawmakers in saying the legislatures would not jam through cut-and-dried legislation without having studied it.

Governor Sterling, made a member of the legislative committee, opened Monday's meeting and left immediately. He offered no criticism of the legislative resolution that ignored his plea for the emergency conservation law. Senator Walter C. Woodward, of Coleman, was elected chairman, and Representative A. M. Howsley, secretary.

Suggests Special Session

To Senator Walter F. Woodul's suggestion that a special session of the Texas legislature later may be necessary to pass a completed law. W. Scott Haywood, Governor Huey Long's representative from Louisiana, retorted that the Texas commission's acts in raising East Texas proration was the most serious threat now, and that the Texas conditions could be remedied under present laws.

States represented were Arkansas, Kansas, Wyoming, New Mexico, California, Colorado, Oklahoma, Louisiana and Texas. The Federal Oil Conservation Board was officially represented. Senator Woodul declared a special session of the Texas legislature would be justified to keep the oil industry from getting in worse condition.

Sharp Division

In recognizing the sharp division between the governors' oil states advisory group and the proposed legislative takeover of deliberations, representatives of all states protested the lack of co-operation. W. M. Downing of Colorado told Monday's meeting a legal committee of the oil states advisory group was drafting a tentative interstate compact and uniform oil conservation bill, and the conference recessed to wait on that work.

Mr. Pollard contended that the purpose of the conference was to get recommendations from governors and legislative committees to the various legislatures to have needed laws passed, saying that recommendations of an outside body, such as the Oil States Advisory Committee, with no legislative members or contacts, would get nowhere, and no progress will have been made by waiting for that committee and the action on its recommendations. The legislative committees could use the recommendations and findings of the advisory committee, he said, and put them to practical use.

Mr. Parrish denied there was any intention to conflict with the work of the advisory committee, declaring that body is doing "a wonderful work," and this conference is to put into law the thing found necessary by the committee. He thought that without this legislative conference, the committee's recommendations would not get over and then "no one knows what would happen to the industry."

Mr. Cox wanted something concrete and declared the situation demands early action.

Senator Pollard asked why not hold subsequent meetings and get together by August 1 to adopt an acceptable plan of uniform action by the states.

Mr. Marzel replied that conditions are so serious that the matter should be expedited and not delayed until August. He indorsed the laws being recommended by the advisory committee as being excellent and said they should be taken to the several legislatures at once.

Texas Criticized

Mr. Downing declared that all states had mowed down their allowables except California, where there was a slight increase, and Texas, with a large increase. He said East Texas had been increased to 130,000 bbls. and now to 160,000 bbls. and he asked if that was fair to the others.

"If Texas is not going to play fair," he went on, "we might as well tear up any compact and go home. Other states are entitled to increases if Texas persists, and then serious trouble will come. If this continues, you can not escape universal 10-cent oil. It surely is coming. East Texas has pointed the way. Your railroad commission should not listen to these pleadings, but should hold East Texas to 130,000 bbls. and announce a six-month policy of keeping down the allowable."

R. R. Penn, Governor Sterling's oil states advisory representative, present only as an onlooker, disclaimed conflict with the legislative committee.

"The oil industry can not afford to wait for a lot of conferences," W. H. Cooley of California said, in pointing out his legislature had ignored the bid for a delegation at the Austin meeting.

"Texas, raising its allowable, is the worst offender," the meeting was told by Thurman Hill of Kansas. "No legislation is needed, so much as direct action.

(Continued on Page 149)

NEXT MEETING ON COMPACT PLAN TO BE HELD IN DENVER AUGUST 10

AUSTIN, Tex., May 5.—The legislative Oil Conference and Oil States Advisory Committee voted here to hold its next meeting in Denver, Colo., August 10, to be attended by Governor Sterling of Texas and other oil states governors invited.

Promises of probable special sessions of the Texas and Wyoming legislatures to pass on its final uniform oil bill were made.

The meeting closed here with resolutions pledging the states groups to uniform policies and an interstate compact.

Gas Men Plan Interesting Convention

Annual Meeting in Memphis Promises to Provide Delegates Four Busy Days, Along With Pleasant Recreational Features

By Thomas F. Smiley

Preparations for the annual meeting of the Natural Gas Department of the American Gas Association, to be held in Memphis, Tenn., May 11-14, forecast four busy days for the 1,000 delegates expected to be present. Indicative of the interest in this convention is the fact that early last month room reservations at the headquarters hotel, the Peabody, had exhausted the accommodations of that big hostelry. Other hotels convenient to the

H. C. Cooper
Chairman, Natural Gas Dept., A. G. A.

place of meeting are preparing to take care of visitors under the guidance of the hotels committee, of which J. J. Brennan, Memphis, is chairman. Some of these also will have virtually room filled during the convention. As in former years, many delegates will be accompanied

R. W. Gallagher
Vice President, American Gas Assn.

by wives or other members of their families. Railroads are giving reduced fares.

This is the fourth yearly meeting of the organization since it discontinued its existence as a separate body, the Natural Gas Association of America, and entered the American Gas Association as the Natural Gas Department, holding a convention each May as previously, however, in addition to the annual meeting in October of the parent body. Beginning next year, if the present program is carried out, the annual meetings of the Natural Gas Department will be held in Tulsa, in connection with the International Petroleum Exposition, which plans to hold its shows in May instead of October.

Southern Hospitality Lures

In turning again to the South for its meeting place in 1931 the time and place committee may have been influenced by the unreserved hospitality which the gas men received last year in New Orleans, La. Memphis, sometimes referred to as the crossroads of the South, is declared to have been a meeting point for centuries. Penetrating in 1541 to the spot where Memphis now stands, Fernando De Soto, Spanish explorer, and his followers came upon a band of Chickasaw Indians holding a session on the Mississippi River bank, for even in that early time aboriginal trails from many directions converged at this point. Spanish, French and English soldiers in turn established forts here, for they recognized that if they could command thhe crossroads they held the key to control of the Middle South. In the last five years Memphis is credited with having taken first place as a convention city in the South and it is included among the leading 10 in the whole United States.

Papers and discussions announced for the Memphis meeting reflect the marvelous advance made in the business of producing, transporting and marketing natural gas. Contributing to them will be men who have gained worldwide reputations in this field. The program prepared by a committee under the chairmanship of E. F. Schmidt, Dallas, Tex., assures sessions of high interest on each of the four days. Features which will engage special attention of the delegates are the drilling symposium on Wednesday and the production symposium on Thursday. Speakers from different parts of the country will handle these subjects, after which there will be general discussion. General oversight of convention details is in the hands of E. J. Stephany, secretary, Dallas.

Business Sessions Open Tuesday

On Monday there will be registration of delegates and meetings of the main technical and research committee and of subcommittees. H. C. Cooper, of the Hope Natural Gas Co., Pittsburgh, Pa., chairman of the Natural Gas Department, will open the first business session of the convention at 9:30 o'clock Tuesday forenoon. Following an invocation by a Memphis clergyman and a welcoming address by Mayor Watkins Overton, of Memphis. Mr. Cooper will deliver the annual chairman's address, summarizing the work accomplished in the last year and indicating the character of the work that lies ahead. H. L. Montgomery, manager of the Cities Service Gas Co., Bartlesville, Okla., is vice chairman. Representatives of the American Gas Association will be heard at the convention, Major Alexander

H. L. Montgomery
Vice Chairman, Natural Gas Dept., A. G. A.

Forward, managing director of the association, and E. D. Milener, of the association's research department, being among the speakers.

The amazing growth of the natural gas industry in recent years has created many new problems in connection with

E. L. Rawlins
United States Bureau of Mines

the production, conservation, transportation and economical distribution of this fuel and these will be discussed at the forthcoming convention by men who have given much time and study to their solution. Substitution of natural gas for fuel oil and coal is taking place in many

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PROGRAM NATURAL GAS CONVENTION

MONDAY, MAY, 11—10:30 A. M.

Meeting of the Main Technical and Research Committee and subcommittees, Room 209, Mezzanine Floor, Hotel Peabody.

5:30 P. M.

Meeting of the Managing and Advisory Committees, Natural Gas Department, Room 211, Mezzanine Floor, Hotel Peabody.

6:30 P. M.

Annual Dinner, Managing and Advisory Committees, Natural Gas Department, Room 213, Mezzanine Floor, Hotel Peabody.

TUESDAY, MAY 12—9:30 A. M.

Invocation—Very Reverend Israel H. Noe, Dean of Saint Mary's Cathedral, Memphis, Tenn.

Address of Welcome—Hon. Watkins Overton, Mayor of Memphis.

Address of the Chairman—H. C. Cooper, Hope Natural Gas Co., Pittsburgh, Pa.

Address—Alexander Forward, Managing Director, American Gas Association.

Gas, Its Place in Our Time—R. W. Gallagher, East Ohio Gas Co., Cleveland, Ohio.

Selling Natural Gas—B. H. Gardner, Columbia Gas & Electric Corp., Columbus, Ohio.

2:00 P. M.

Natural Gas Statistics—Their Value—L. L. Dyer, Lone Star Gas Co., Dallas, Tex.

Wrinkles—H. J. Hoover, Cincinnati, Ohio.

Our Main Technical and Research Committee—H. D. Hancock, Henry L. Doherty & Co., New York, N. Y.

Gas Measurement—H. S. Bean, U. S. Bureau of Standards, Washington, D. C.

Pipe Line Flow—W. B. Berwald, U. S. Bureau of Mines, Bartlesville, Okla.

Gas Well Deliveries—E. L. Rawlins, U. S. Bureau of Mines, Bartlesville, Okla.

Utilization Research and Gas for Cooling—E. D. Milener, American Gas Association, New York, N. Y.

Compression and Transmission of Natural Gas—P. McDonald Biddison, Southern Natural Gas Corp., Birmingham, Ala.

WEDNESDAY, MAY 13—9.30 A. M.

Drilling Symposium—The entire morning will be given over to a discussion of drilling. Each speaker, following a prescribed outline for easy comparison, will give a presentation on the subject covering his section of the country. After the three presentations, the meeting will be open for a general discussion of drilling.

For the East—J. French Robinson, Hope Natural Gas Co., Pittsburgh, Pa.

For the Mid-Continent—B. M. Nowery, United Gas Public Service Co., Houston, Tex.

For the Pacific Coast—To be announced later.

2:00 P. M.

Natural Gas Fellowships—J. B. Tonkin, Peoples Natural Gas Co., Pittsburgh, Pa.

A Uniform Classification of Accounts—E. N. Watkins, Arkansas Natural Gas Corp., Shreveport, La.

Detection and Prevention of Distribution System Leakage—J. A. Martin and L. B. Denning, Jr., Lone Star Gas Co., Dallas, Tex.

Modernism in Distribution Design and Operation—G. J. Heckendorn, Public Service Co., Denver, Colo.

The Origin of Dust and Its Elimination—D. A. Sillers, Lone Star Gas Co., Dallas, Tex.

Field Testing of Large Positive Meters—John C. Diehl, Metric Metal Works, Erie, Pa.

THURSDAY, MAY 14—9:30 A. M.

Production Symposium—The three speakers on the Production Symposium will each follow a prescribed outline and will deal with the subject for their sections of the country. The meeting will be open for general discussion after the three presentations.

For the East—S. W. Meals, Carnegie Natural Gas Co., Pittsburgh, Pa.

For the Mid-Continent—R. M. Stuntz, Cities Service Gas Co., Bartlesville, Okla.

For the Pacific Coast—To be announced later.

General Entertainments—Monday, Tuesday and Wednesday.

Special entertainment is being arranged for the ladies, details of which will be announced in the regular program.

Men Who Will Be Heard at the Memphis Convention

J. French Robinson
Hope Natural Gas Co.

P. McDonald Biddison
Southern Natural Gas Corp.

R. M. Stuntz
Cities Service Gas Co.

E. N. Watkins
Arkansas Natural Gas Corp.

D. A. Sillers
Lone Star Gas Co.

J. C. Diehl
Metric Metal Works

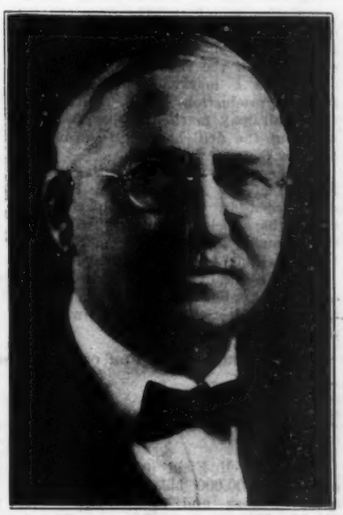
L. L. Dyer
Lone Star Gas Co.

B. M. Nowery
United Gas Public Service Co.

W. B. Berwald
United States Bureau of Mines

H. D. Hancock
Henry L. Doherty & Co.

H. S. Bean
United States Bureau of Standards



S. W. Meals
President, Carnegie Natural Gas Co.

Texas Cretaceous Wells Short Lived

Review of Data on Older Woodbine Pools in Texas Indicates That Production From East Texas Pools Will Be Quickly Secured

By L. G. E. Bignell
Petroleum Engineering Editor

In view of the present intensive activity in the East Texas pools certain statements contained in the recently issued report of investigations 3,059, "Development and Production History on the Salt Flat and Other Fault Fields of East Central Texas," by H. B. Hill, E. V. H. Bauserman and C. B. Carpenter for the United States Bureau of Mines is of particular interest.

In considering this report it is assumed the opinions advanced by geologists familiar with the East Texas Field are correct and the producing horizon is a Woodbine sand reworked during Eagle Ford age, with the true Woodbine formation lying directly beneath the producing stratum.

The accompanying sketch illustrates this idea and on this basis the producing sands may be compared with the producing formations of the Mexia, Powell and Wortham Pools. In this Report of Investigations 3,059 the authors make comparison between the fault production of Luling and Salt Flat Fields with the Woodbine fields, but for the purpose of this paper the information regarding the Woodbine sands alone will be used.

It is stated that "the production history of each of the above named fields is interesting but direct comparison must be made carefully. The Powell and Wortham Fields were drilled quickly and the spacing of the wells was relatively close. The Mexia Field contained the largest acreage and had the widest spacing of wells. The estimated ultimate recovery for this field was the lowest.

Water Appeared Early

"Water appeared early in all the fields, and, while the beneficial results that may be derived from a natural water drive and flushing of the pay zone may be questionable, the cost incident to lifting and disposing of this water is of great importance to the operators. The principal source of this water is immediately below the oil. While exact statements cannot be made regarding directional movement of the water, observations and field data suggest a general vertical movement in the Woodbine sand fields, namely Powell, Wortham and Mexia."

Comparison of Decline Rate

Thus far in the drilling of the East Texas area no faults have been encountered that can be said to affect the accumulation of oil and therefore the rate of production. There is a fault known to extend from east to west across the south end of the field that may or may not prove a marker for the southern limit of production. It is possible that this fault may mark another production area but the drill has yet to prove this to be a fact.

If the effect of the faulting of the Powell, Mexia and Wortham Fields is disregarded in making comparison between those fields and East Texas pools the following table taken from Report of Investigations 3,059 can be considered:

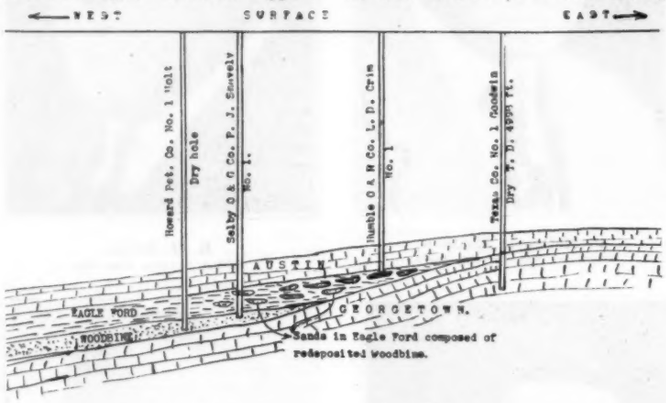
"The decline expressed as a percentage of the first calendar year's production for the four fault fields discussed in the report was as follows:

DECLINE IN PER CENT OF THE FIRST YEAR'S PRODUCTION

Field—	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year
Powell	1923	48%	70%	82%	88%	92%	....	....
Mexia	1921	47%	69%	80%	86%	89%	93%	94%
Wortham	1924	83%	93%	96%	97%	....	....	....
Luling	1932	7%	24%	40%	50%	58%	....	....

"The Powell Field produced approximately 33,000,000 bbls. of oil the first calendar year and approximately 17,000,000 bbls. the second year. The decline is, therefore, 16,000,000 bbls., or 48 per cent. During the third year the production for the field declined to approximately 10,000,000 bbls., a decrease of 23,000,000 bbls. or 70 per cent of the first year's production."

If it is assumed that the east edge of the East Texas pools is marked by an impervious stratum of either shale or the Georgetown lime and the lateral movement of the water is from west to east, it seems safe to state that the same type of force will act in the East Texas pools to drive the oil through the sands as was responsible for the drainage of oil in the fault line fields of Wortham, Powell and Mexia. As the oil is withdrawn in the East Texas pools it will be replaced by some other element and this will undoubtedly be the water that is known to lie to the west of the oil. If these assumptions are granted the following paragraph from this report will be interesting.


WEST
SURFACE
EAST
Howard Pet. Co. No. 1 Holt
Dry Hole
Salty O & G Co. P. J. Sauvely No. 1.
Humble O & R Co. L. D. Crim No. 1
Texas Co. No. 1 Goodelis Dry W. D. 4991 Ft.
AUSTIN
EAGLE FORD
GEORGETOWN
WOODBINE
Sands in Eagle Ford composed of redeposited Woodbine.

Geological section of East Texas area according to Woodruff, Parker and others.

"The water commonly occurring with the oil in the fault fields may be a factor in moving the oil to the wells, thereby making higher recoveries possible, especially as long as it is feasible to handle all of the fluid coming into the hole without resorting to special equipment and extreme pumping practices. The possibility of dewatering the pay formation by the use of long stroke and fast-pumping methods is questionable. It is believed, however, that the water production should be controlled during the development period by conservation of the gas pressure and later by abandoning certain wells when it is no longer economical to produce them and by plugging back other wells when the pumping equipment will not handle the fluid as fast as it comes into the hole.

"Systematic casing, studied penetration depths, well abandonments and plugging back practices are the important preventive and remedial measures closely associated with the water problem."

Plugging Back Methods

To those interested in methods of repairing wells in the East Texas pools after water has made its appearance an article published in the 1926 edition of

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Colombian Law Is Declared Unfair

Contains So Many Objectionable Provisions That Operators Are Unlikely to Proceed With Development Programs

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 4.—It seems evident that there will be no great eagerness on the part of oil companies to operate in the Republic of Colombia under the new petroleum law which has been approved by the president of the republic. While the law was pending in the Colombian congress it was criticized by representatives of American oil companies as unfavorable to any organization seeking new concessions or that might have to continue operations under its provisions. Only a few of the objectionable features were eliminated or modified.

This new Colombian petroleum law does not affect contracts of oil companies owned by the Standard Oil Co. of New Jersey nor the Carib Oil Co., which owns the Barco concession and which in turn is owned by the Gulf Oil Co. It does apply to some concessions held by the Standard of New Jersey, the Texas, the Gulf and the Standard of California. In view of the provisions of the law, The Texas Company has already given notice that it will withdraw from all activities in Colombia.

Among the most offensive provisions of the new oil law are those contained in Articles 5, 20, 31, 35 and 37.

Article 5 places an obligation upon the concessionnaire to turn over to the government, gratis, data and studies which are exclusively private property.

Article 20 obligates the contractor to produce no less than 25 per cent of the "maximum producing capacity" of the wells that have been placed in production, which capacity is eventually determinable by arbitration.

Article 31 provides that every concessionnaire of exploration and exploitation of petroleum belonging to the nation shall pay to the government at the port of shipment of his products a percentage of the gross product ranging from 11 down to 2 per cent, according to the distance to the port of shipment.

Must Store Government's Oil

In case the government desires to delay acceptance of its portion of the oil the concessionnaire must store the oil for a period and be responsible for its safety, which is practically requiring the concessionnaire to insure the government's oil. These royalties are very high at the mouth of the well and still more so if collected at the seaport. The burden in this way is doubled and it increases with the government's ability to demand its share sometimes in money, sometimes in kind, sometimes in both, either at the well or at the seaport, and with a further obligation to store the government oil. The obligations in respect to gasoline and gas add to these burdens.

Article 35 of Chapter 7 is also objectionable as a tax on privately owned petroleum. This tax is the only one which is collected in kind and not in money only, as are all other taxes. An oil operator on national lands in the first zone pays 11 per cent to the government, and 8 per cent on private land in the same zone. That is, the private owner pays 72 per cent of what the government contractor has to pay, which is clearly prohibitive, confiscatory and without any compensation by the nation. It is contended that when the operators have to pay the owner a royalty, the royalty plus the tax will make exploitation impracticable.

Concerning Pipe Lines

Article 37 in Chapter 8, although confirming the right to build private pipe lines, this right is qualified and made subject to approval or denial by the government. It provides that the general route of every pipe line, which shall be the shortest practicable route in connection with technical requirements as well as the location of the sea or river terminal thereof in the port of shipment selected by the operator, shall be submitted for approval to the government. After obtaining this approval, the company may not proceed to construct such pipe lines without submitting the final location, plans and detailed estimates of construction and operation, and the specifications for the same to the government for approval, and the government may only refuse its approval for technical reasons.

The provisions of the law in many respects are so restrictive and uneconomic that it is said to be most probable that no new oil operations will be begun or developed under it. For this reason, it is believed that, far from attracting capital and promoting the utilization of those natural resources, it will bring about their stagnation, affecting at the same time the general economic situation and postponing new revenues and benefits, both direct and indirect, which were expected from the oil industry.

Acceptance of Arbitration Obligatory

Article 9 is also objectionable because it requires obligatory acceptance of arbitration in which the operator may have only minority representation, and this

(Continued on Page 148)

Refiners Hold Crude Runs to Demands

Mid-Continent Refinery Operations in May Slightly Increased Over April, but 64,000 Bbls. Under Year Ago

By W. T. Ziegenhain

Mid-Continent refiners will increase their runs in May about 13,000 bbls. compared to April, but the average of 510,640 bbls. daily will be 64,000 bbls. less than the runs for May of last year. This year's operations are also substantially below those of two years ago, and, considering the low gasoline stocks and the increased seasonal demand which will soon be left, refinery operations are being kept in control more closely with respect to demands than previous years.

RUNS TO STILLS AT MID-CONTINENT REFINERIES

1929	
April 1	530,530
May 1	577,500
June 1	583,030
July 1	565,800
August 1	555,250
September 1	552,300
October 1	544,720
November 1	545,473
December 1	540,630
1930	
January 1	535,460
February 1	519,355
March 1	531,500
April 1	555,250
May 1	574,300
June 1	572,250
July 1	548,475
August 1	526,400
September 1	498,710
October 1	518,800
November 1	506,700
December 1	478,360
1931	
January 1	478,795
February 1	470,125
March 1	449,634
April 1	497,391
May 1	510,640

MID-CONTINENT REFINERY OPERATIONS

(Based on Operations May 1, 1931, and April 1, 1931)

Districts—	No. of plants	May 1 Daily crude cap. (1 bbl.)	May 1 Daily crack. cap. (bbls.)	May 1 Plants oper.	May 1 Runs to stills	April 1 Plants oper.	April 1 Runs to stills	May 1 Daily inc.
Arkansas	9	47,800	21,250	9	26,950	9	27,830	*880
Kansas	15	147,000	88,200	15	87,900	14	83,500	4,400
North Louisiana	7	54,300	18,000	5	27,825	5	29,325	*1,500
Oklahoma	53	337,300	119,150	41	186,900	39	185,561	1,339
No. and Cent. Texas	47	210,450	63,600	42	119,365	43	120,694	*1,329
West Texas	29	147,600	53,250	21	61,700	20	50,481	11,219
Total	162	936,450	363,450	133	510,640	130	497,391	13,189

*Decrease.

East Texas Field

The uncertainty of developments in the East Texas Field has influenced the demoralization of the refined oil market in the Mid-Continent and the fact an agreement has been recently reached which promises to hold East Texas production under control, has tended to delay the shutting down of small operating plants which cannot pay current expenses. The hope that better prices may soon be realized has even caused an increase in the number of operating plants.

The construction program for the building of eight topping units in the East Texas area continues to be carried out but there has been no announcements of additional new plants. During the past week the new 6,000-bbl. plant of the East Texas Refining Co. at Longview was started up making the second plant of the company to begin operations in this field.

Oklahoma Operations

Oklahoma refinery operations will not be materially changed during May. Total crude runs will approximate 186,900 bbls. compared with 185,561 bbls. last month. The schedules of the individual plants will also remain very near those for a month ago, the only major change being made at the Empire Oil & Refining Co. plant at Ponca City where the crude runs have been increased to 11,000 bbls. This plant had been increased in its capacity to equalize the shutting down of the company's refinery at Cushing last year.

Except for the Black Gold Refining Co. at Oklahoma City, the group of six new plants in that field, the operations have been intermittent and at present only two have adopted a schedule of runs throughout the month.

North Central Texas

Although the North Central Texas group of refiners will run the same volume of crude during May as during April, there has been a tendency toward curtailing operations in the Wichita Falls area. The operations of the new East Texas plants has caused the total runs to remain at the same level and equalize the effect of shutting down three plants.

Included in the list of plants temporarily discontinuing operations are the Atlantic, Pacific and Gulf Refining Co. at Wichita Falls, the Iowa Park Producing & Refining Co. at Iowa Park, and the LaSalle Petroleum Co. plant at Burkburnette.

One new plant is under construction in the north central group, outside of the East Texas area. That plant is being built by the Young Refining Co., at Archer City and will have a capacity of 300 bbls. daily. W. C. Young will be president of the company upon its formal organization.

West Texas

West Texas refinery operations as a whole, show a large increase in crude runs for May compared to April but this is due principally to the resumption of a normal operating schedule in the McCamey plant of the Humble Oil & Refining Co. The West Texas crude runs will be increased from 50,481 bbls. to 61,000 bbls., a difference of 11,219 bbls. in the daily charges. The increase in the Humble runs at McCamey accounts 7,000 bbls. Another contributing factor is the starting up of the Tonkawa Petroleum Co. plant at Pyote. Operations are being directed by the Continental Oil Co. which has had an interest in the company for some time.

Kansas

Kansas refinery operations will be on a slightly improved scale during May, the group estimating average crude runs of 87,900 bbls. daily. This compares with 83,500 bbls. a month ago. The principal factor in the increase is the resumption of a full schedule of operations in the

(Continued on Page 150)

REFINERY OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs May 1	Runs Apr. 1
Anderson-Prichard Oil Corp., Cyril	5,000	4,200	4,500
Barnsdall Refineries, Inc., Barnsdall	6,000	3,000	3,500
Barnsdall Refineries, Inc., Okmulgee	10,000	4,500	5,000
Bell Oil & Gas Co., Grandfield	4,500	2,000	1,600
Black Gold Refining Co., Oklahoma City	1,500	800	800
Capital City Refining Co., Oklahoma City	2,500	400	800
Century Petroleum Co., Tulsa	500	200	(*)
Century Petroleum Co., Oklahoma City	2,500	(*)	(*)
Champlin Refining Co., Enid	16,000	8,000	8,000
Citizens Refining Co., Seminole	1,000	(*)	(*)
Continental Oil Co., Sapulpa	10,000	1,500	3,000
Continental Oil Co., Ponca City	30,000	17,600	19,400
Cushing Refining & Gasoline Co., Blackwell	1,800	1,500	1,500
Cushing Refining & Gasoline Co., Cushing	3,500	2,500	2,500
Deep Rock Oil Corp. (Shaffer), Cushing	10,000	10,000	10,000
Eason Oil Co., Enid	5,000	3,000	3,000
Electrol Refining Co., Oklahoma City	3,000	(*)	(*)
Empire Oil & Refining Co., Cushing	5,000	(*)	(*)
Empire Oil & Refining Co., Okmulgee	4,000	4,000	4,000
Empire Oil & Refining Co., Ponca City	12,000	11,000	8,000
Garber Refineries, Inc., and Omar Refining Co., Garber	3,500	2,200	2,300
Globe Oil & Refining Co., Blackwell	7,500	6,000	6,000
Globe Oil & Refining Co., Cushing	15,000	5,000	5,000
Gulf States Corp., Oklahoma City	2,500	1,000	2,000
Illinois Oil Co., Cushing	3,000	(*)	(*)
Imperial Refining Co., Ardmore	5,000	(*)	(*)
Johnson Oil Refining Co., Cleveland	6,000	4,900	4,600
Mid-Continent Petroleum Corp., West Tulsa	40,000	21,000	19,000
Marathon Oil Co., Boynton	2,500	(*)	(*)
Marathon Oil Co., Bristow	5,000	3,500	3,500
Morgan Development Co., Tonkawa	3,000	(*)	(*)
Peacock & Peveto Refining Co., Oklahoma City	3,000	200	200
Peppers Gasoline Co., Covington	1,000	700	685
Phillips Petroleum Co., Okmulgee	5,000	3,300	3,300
Producers Oil Co., Bristow	2,500	1,500	1,500
Producers & Refiners Corp., West Tulsa	6,000	4,000	4,000
Pure Oil Co., Ardmore	5,000	2,000	1,700
Pure Oil Co., Muskogee	9,000	7,500	7,500
Rock Island Refining Co., Beckett	3,500	3,500	3,500
Sinclair Refining Co. (Pierce), Sand Springs	8,000	6,500	6,000
Standard Oil & Refining Co., Oklahoma City	2,000	(*)	(*)
Sun Oil Co., Yale	5,000	4,400	4,500
Sunray Oil Co., Allen	7,000	4,000	4,000
The Texas Company, West Tulsa	15,000	12,000	14,000
Texas Pacific Coal & Oil Co., Wynnewood	3,000	2,000	(*)
Tidal Refining Co., Drumright	15,000	10,000	9,000
Western Oil Corp., Beckett	2,000	1,400	1,400
Wewoka Refining Co., Wewoka	2,000	(*)	(*)
White Oak Corp., Allen	3,000	(*)	(*)
Wilcox Oil & Gas Co., Bristow	5,000	2,000	2,500
Wirt Franklin Petroleum Corp., Ardmore	4,000	3,000	2,776
Yale Oil Corp., Yale	2,000	1,100	1,000
Total	337,300	186,900	185,561

*Shut down.

REFINERY OPERATIONS IN WEST TEXAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs May 1	Runs Apr. 1
Amarillo Producers & Refiners Corp., Pyote	3,000	(*)	(*)
Big Spring Refining Co., Big Spring	2,500	2,400	1,600
Big Lake Refining Co., Big Lake	2,000	(*)	(*)
Bluebonnett Oil Refining Co., Wickett	5,000	(*)	(*)
Burford Oil Co., Pecos City	6,000	4,500	4,500
Coltex Refining Co., Colorado	10,000	6,800	6,800
Cosden Oil Co., Big Spring	15,000	6,000	4,000
Deer Oil Corp., Luling	2,500	(*)	(*)
Grayburg Oil Co., San Antonio	6,000	(*)	(*)
Great West Refining Co., Big Spring	8,500	3,000	3,000
Gulf Oil & Refining Co., Sweetwater	5,000	5,000	5,000
Humble Oil & Refining Co., San Antonio	5,000	1,700	1,200
Humble Oil & Refining Co., McCamey	15,000	8,800	1,900
Magnolia Petroleum Co., Luling	5,000	4,200	4,200
Marathon Oil Co., Del Rio	5,000	1,800	2,500
Misko Refineries, Inc., Laredo	1,500	500	500
Mid-Tex Refining Co., Midland	2,500	(*)	(*)
Motor Fuel Products Co., Laredo	2,000	500	500
Pasotex Petroleum Co., El Paso	14,000	9,500	9,500
Pioneer Oil & Refining Co., Somerset	1,500	350	350
Richardson Refining Co., Big Spring	6,000	(*)	(*)
Rio Grande Oil Co., El Paso	6,000	700	700
San Angelo Refining Co., San Angelo	2,000	200	200
Sweetwater Oil & Refining Co., Sweetwater	2,000	(*)	(*)
The Texas Company, San Antonio	3,000	2,500	2,500
The Texas Company, El Paso	2,000	(*)	(*)
Tonkawa Petroleum Co., Pyote	5,000	1,200	(*)
Texas Mexican Oil & Refining Co., Laredo	600	500	500
Texas Petroleum Products Co., Somerset	1,500	700	700
Wickett Refining Co., Wickett	2,500	300	331
Total	147,600	61,700	50,481

*Shut down.

REFINERY OPERATIONS IN KANSAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs May 1	Runs Apr. 1
Altitude Petroleum Corp., Chanute	3,000	2,000	(*)
Barnsdall Refineries, Inc., Wichita	4,000	1,900	2,800
Derby Oil Co., Wichita	7,500	4,000	4,000
Eldorado Refining Co., Eldorado	4,500	2,800	2,700
Golden Rule Refining Co., Wichita	1,500	900	900
Kanotex Refining Co., Arkansas City	12,000	7,000	7,500
National Refining Co., Coffeyville	6,500	4,000	4,000
Phillips Petroleum Co., Kansas City	6,000	5,000	5,000
Shell Petroleum Corp., Arkansas City	22,000	14,000	14,000
Sinclair Refining Co., Coffeyville	12,000	9,000	9,000
Sinclair Refining Co., Argentine	9,500	5,000	4,500
Skelly Oil Co., Eldorado	23,000	13,500	12,600
Standard Oil Co. of Kansas, Neodesha	20,000	6,000	6,000
Vickers Petroleum Co., Potwin	3,500	2,500	2,000
White Eagle Oil Corp., Augusta	12,000	10,000	8,500
Total	147,000	87,900	83,500

*Shut down.

Deep Field Presented Few Problems

Experiences Gained in Development of Greater Seminole Area Used With Success in the Oklahoma City Field

By L. G. E. Bignell
Petroleum Engineering Editor

In viewing the development of the Oklahoma City Pool in retrospect it is now quite evident that many of the difficulties that were anticipated in drilling wells to a depth of over 6,000 feet never developed into anything serious enough to actually prevent the wells from being completed and produced much as wells in shallower fields.

The practice developed largely in Seminole on the 4,200-foot drilling was used in Oklahoma City and from the very first the 122-foot rotary derrick with the heavy-duty drawworks, high-pressure boilers, large slush pumps, weight indicators and other mechanical details were used in drilling the deeper holes in Oklahoma City.

On the whole this equipment has proven remarkably efficient and very few derrick accidents have been reported and no actual failures. Some crown blocks have been knocked off, girts and braces bent or broken because of traveling blocks or equipment catching or striking against them, and in one or two cases in the river bottom area it was necessary to straighten up a derrick where a corner had sunk into the quicksand and had thrown the structure out of line.

Much credit has been given to the universal use of the weight indicators, mostly of the Martin-Decker type, for these result in low rate of derrick accident, and undoubtedly the fact that there was written into most drilling contracts a clause requiring that the hole not deflect from vertical over 5° and permitting the company's engineers to make check at any time desired after giving the drilling contractor reasonable notice of their intention to make well survey, had a good effect also.

Reports accessible indicate that for the most part the holes in the Oklahoma City Field have been drilled with a total deflection of not to exceed 3° from the vertical from top to bottom. In a 6,250-foot hole this will bring the bottom of the hole 327 feet away from the place where the stake was driven at the surface marking the well's location.

TABLE 1

Equipment—	Seminole Field	Oklahoma City Field
Derricks (steel)	122' A.P.I.	122' A.P.I.
Boilers	3 125 H.P. 250-lb.	3-4 125 H.P. 250-lb. (superheating)
Engines	12"x12" Twin	12"x12" Twin
Drawworks	7⅛" shaft	7", 7⅛" and 8" shafts 4-speed
Rotary line	1⅛" steel	1⅛" steel
Crown blocks	Double deck	Double deck—Manganese sheaves
Traveling block	66" long roller bearing	4 to 5 sheaves roller bearing
Rotary swivel	3" fluid passage	6"x8" size
Mud hose	3" dia. heavy	3" dia. extra heavy
Drill pipe (start)	6⅝" 25.2-lb.	6"x22-lb. special steel
Bits	All types	Cone bits—mostly
Mud pumps	14⅛"x7½"x18" 250-lb. steam end 1,500-lb. water end	14½"x7⅛"x18" 250-lb. steam end 1,500 to 1,800-lb. water.

Comparison of Equipment

In the accompanying Table 1 is listed the types of equipment used in the Greater Seminole area and in Oklahoma City Pool. The Greater Seminole equipment considered was that used when that field was at the height of its development, and that used in the Oklahoma City indicates that most of this type equipment was adapted to the conditions there, with a few minor changes made necessary by deeper holes:

For the most part it will be noted that the equipment developed to drill holes at high speed in the Greater Seminole area was suitable for the work in the Oklahoma City but in many details alloys or higher grades of steel were used in the younger field, as for instance the man-

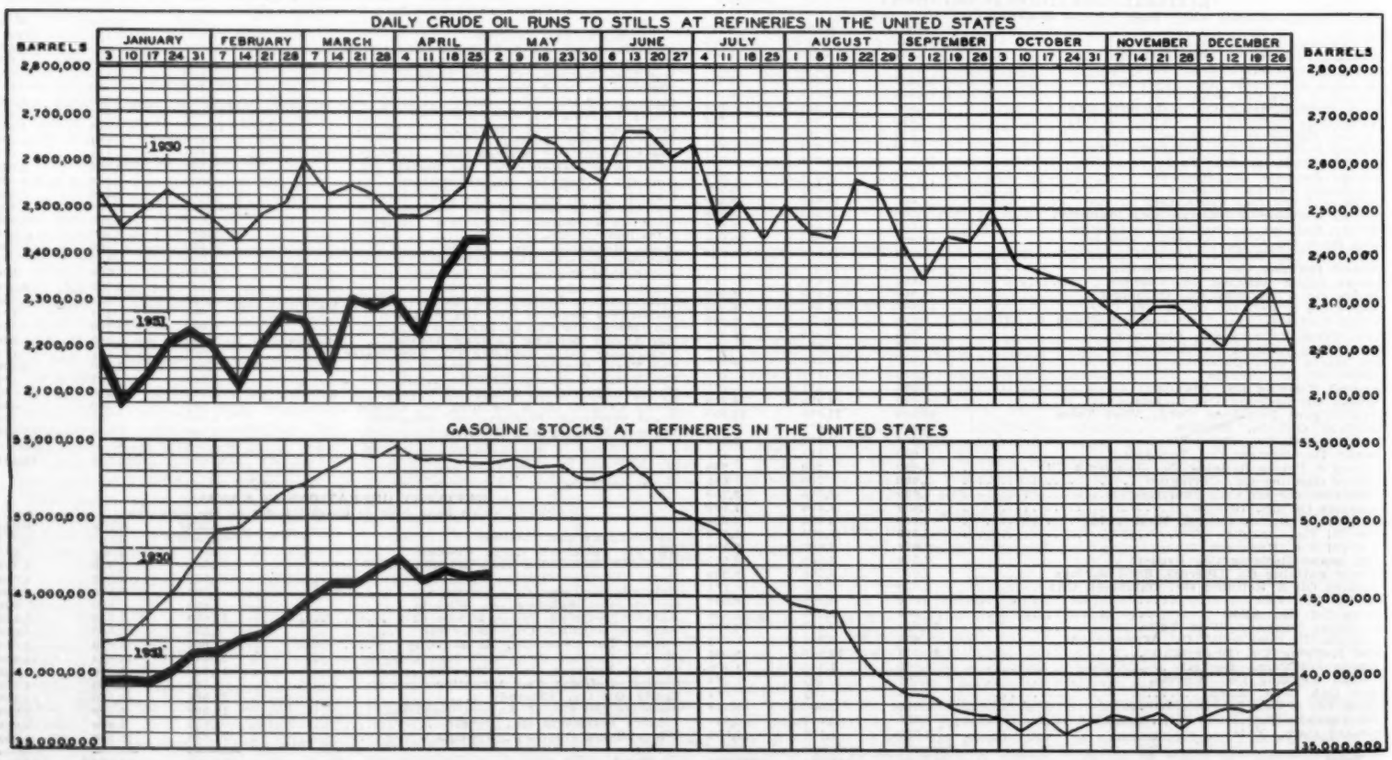
(Continued on Page 147)

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending May 2.

	Week ending May 2, 1931				Week ended April 25, 1931				Week ending May 3, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	455,000	8,453,000	8,027,000	100.0	483,200	8,907,000	7,730,000	100.0	495,814	9,621,000	6,679,000
Appalachian	93.8	77,600	1,772,000	1,203,000	93.8	88,600	1,824,000	1,227,000	91.0	88,329	1,829,000	742,000
Indiana, Illinois, Kentucky	97.5	333,000	6,191,000	3,589,000	97.5	328,200	6,125,000	3,505,000	99.5	323,614	8,589,000	3,626,000
Oklahoma, Kansas, Missouri	89.4	279,400	3,650,000	4,017,000	89.4	277,100	3,667,000	3,938,000	89.1	301,829	4,399,000	4,123,000
Texas	91.9	552,400	7,976,000	8,701,000	91.9	560,400	7,953,000	9,002,000	90.8	552,787	8,025,000	9,624,000
Louisiana and Arkansas	98.3	159,600	2,305,000	2,299,000	98.3	167,300	2,372,000	2,327,000	96.8	167,100	2,664,000	1,942,000
Rocky Mountain	93.1	49,900	1,847,000	824,000	93.1	51,000	1,874,000	812,000	93.6	56,929	2,817,000	1,097,000
California	98.8	492,400	13,419,000	98,977,000	98.8	477,100	13,829,000	98,860,000	99.3	595,529	15,882,000	108,162,000
Total United States	95.7	2,399,300	45,613,000	127,637,000	95.7	2,432,900	46,451,000	127,401,000	95.6	2,581,931	53,826,000	136,015,000
Texas Gulf Coast	100.0	410,900	6,798,000	6,205,000	100.0	419,300	6,820,000	6,546,000	100.0	423,800	6,948,000	6,984,000
Louisiana Gulf Coast	100.0	104,700	2,140,000	1,300,000	100.0	111,900	2,108,000	1,309,000	100.0	109,328	2,282,000	1,065,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1931 based on weekly reports of the American Petroleum Institute. Data for 1930 derived from monthly reports of the Bureau of Mines, Department of Commerce. Figures for last week not shown in graph but are included in above tables.

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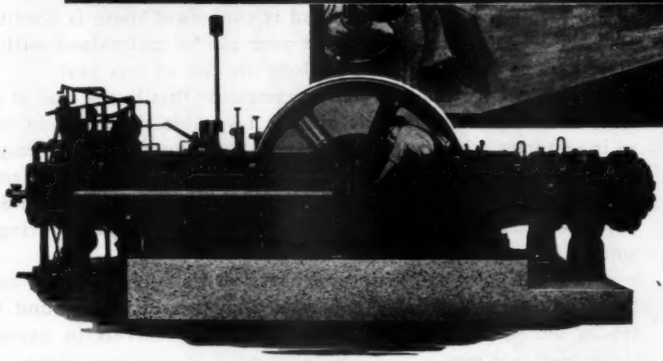

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THE DARKEST HOUR

The darkest hour, it has been said, is just before the dawn.

Students of economic trends recall that in other periods of world depression the turn had actually come before people were aware of it and when they were in the deepest dumps.

Looking back, we are now able to see that the symptoms of the depression in the fall of 1929 were visible but not noticed in the early months of that year.

When the world first realizes that it is emerging from the trough of that depression it will be able to look back and see signs of the start of that recovery that were unheeded at the time.

In times like this everybody looks at only the gloomy side of the picture yet it is evident that, judging by the improved statistical situation in the oil industry, we are at the beginning of the end.

Simply because prices have not improved is no indication that constructive forces are not at work. In a period of depression and general deflation such as all industries have been going through a basic improvement may be actually under way some time before it becomes apparent even to the people in a given industry.

The Bureau of Mines report covering petroleum operations during March reflects the success of efforts made over the past year to keep production of crude oil and products in line with demand.

Stocks of crude oil as of March 31 were 499,210,000 barrels, a decrease of approximately 40,000,000 barrels from the 538,281,000 barrels in storage a year ago.

Incidentally, this is the largest yearly decrease in crude oil stocks since the post-war period.

The decrease during March totalled 4,770,000 barrels, which was also an exceptional reduction for any monthly period.

This development over March and for the entire year reflects not only the efforts to keep production down to demand but also to permit substantial withdrawals from storage, a development admitted by all to be necessary.

The crude oil production during March aggregated 69,397,000 barrels, or a daily average of 2,239,000 barrels, contrasted with a March production a year ago of 77,600,000 barrels, an average of 2,503,000 barrels daily.

If the producers had not controlled their operations during the past year and had been content to produce as much as the year before, instead of a withdrawal of almost 5,000,000 barrels from storage there would have been an increase of almost 3,000,000 barrels.

Turning to the refining end there is also reason for encouragement. Stocks of gasoline, including motor fuel blended at natural gasoline plants totalled 48,225,000 barrels on Mach 31, a decrease of approximately 7,000,000 barrels from the 55,239,000 barrels in storage a year ago.

This situation assures the refining industry entering the season of maximum gasoline consumption with between 7,000,000 and 8,000,000 barrels less gasoline than it did last year at the same period.

On the whole, refiners have little to complain about gasoline demand in a period when consumption of practically all other principal commodities is substantially less than it was a year or two years ago.

The domestic demand for gasoline as estimated by the Government for the first quarter of the year totalled 84,014,000 barrels against 83,050,000 barrels in the first quarter of 1930.

Exports of gasoline, it is true, have decreased almost 50 per cent so that the total demand for motor fuel is less than it was a year ago, but so far as the export situation is concerned there is reason to believe it will improve materially before the end of the year.

It is recognized that the expansion of foreign refining facilities has taken some of the business formerly supplied by refiners in this country, but the conditions in the first quarter of this year were abnormal and it is certain American refiners will be able to recover some of the lost export business.

So far as the domestic demand is concerned there is confidence that the slight increase over last year can be maintained with possibly a more marked increase before the end of this year.

In this connection it is well to remember that in the case of gasoline, as in the case of crude oil, the favorable statement in regard to inventories could not have been obtained by refiners if they had not been willing to keep their operations in line with ready demand.

During the first quarter of last year refiners in the United States produced 108,330,000 barrels of gasoline and this year during the similar period only 99,287,000 barrels.

If the refiners had maintained last year's operating rate during the first three months of this year they would have found their stocks on March 31 approximately 3,000,000 barrels in excess of those of a year ago.

In the kerosene market, due to both the general depression and the finding of substitutes, both the domestic and export demand declined during the past year. But instead of piling up inventories, as might naturally have been expected with decreased demand, refiners have controlled their output so that stocks on March 31 were only 6,300,000 barrels, a decrease of more than 25 per cent compared with stocks of 8,455,000 barrels on March 31, 1930.

Despite the slow demand refiners have been able to keep their supply of fuel oil, including gas oils and heavy distillates, in line with demand, so that on April 25, according to the American Petroleum Institute reports stocks totalled 127,401,000 barrels, a decrease of 8,500,000 barrels compared to the same period last year.

Even the inventories in wax have been decreased recently after a two-year period in which they were accumulating rapidly.

Taking the crude oil and refined products figures together, the grand total of stocks of all oils on March 31 was 656,237,000 barrels compared to 700,681,000 barrels on March 31, 1930, a decrease of over 44,000,000 barrels in the industry's inventories at refineries and in the fields.

This demonstration of actual improvement in the industry's statistical position, reported by governmental authority, has been unnoticed because of the tendency to submerge all other factors in concentration upon the immediate present.

That improvement emphasizes the desirability and necessity for continuing the efforts which have brought it about, in contrast to what the situation would have been if there had not been these efforts to control production in line with demand.

The industry is on the right road.

Here is another example of how Dresser Couplings speed up difficult laying jobs. This 208-mile 18-inch gas line went from Louisiana to Memphis in 92 days—across fields, gumbo, swamps, rivers, railroads, canals, ditches and bayous. Dressers are standard for long-distance lines because they make the quickest, tightest and most flexible joints—least expensive to maintain. They remain permanently tight.

S. R. DRESSER MANUFACTURING COMPANY
Bradford, Pa.

DRESSER COUPLINGS DOMINATE

New High Pressure Absorption Plant

Belridge California Unit Treats 60,000,000 Feet of Gas. Produces Low Endpoint and Well Stabilized Product

By J. A. Campbell*

High-pressure absorption plants capable of handling large quantities of gas are becoming the order of the day in the natural gasoline industry. Due to the rapid strides being made in engineering, they differ greatly in design. It is hoped that this description of one of the recently completed installations will prove of interest to some of the members of the California Natural Gasoline Association. The plant is located in the Belridge Field approximately half way between Taft and Kettleman Hills. It treats the gas from No. 15 Belridge, the well brought in last October by the Belridge Oil Co.

The plant has a gas capacity of 60,000,000 standard cubic feet per day, and a distillation and stabilizing capacity of 50,000 gallons per day.

A table depicting a summary of actual operating conditions and results taken over a 24-hour period on April 2 is shown below and will serve as a basis for the discussion of the detailed flow diagrams which follow:

TYPICAL OPERATING CONDITIONS AT BELRIDGE ABSORPTION PLANT OBSERVED APRIL 2, 1931

Quantities

Wet gas to plant, 17,300,000 std. cu. ft. per 24 hours.

Oil Circulation (Gallons)

Main absorbers	190 per min. or 273,600 per 24 hrs.
Reabsorbers	60 per min. or 86,400 per 24 hrs.
Total	250 per min. or 360,000 per 24 hrs.

Pressures

Main absorbers	450 lbs. per sq. in. ga.
Reabsorber	38 lbs. per sq. in. ga.
High-pressure vent tank	205 lbs. per sq. in. ga.
Low-pressure vent tank	40 lbs. per sq. in. ga.
Stabilizer	150 lbs. per sq. in. ga.
Turbine gas supply	180 lbs. per sq. in. ga.

Temperatures

Atmospheric:	
Dry bulb	74° F.
Wet bulb	54° F.
Gases and vapors:	
Wet gas to coolers	130° F.
Wet gas to absorbers	66° F.
Dry gas from absorbers	67° F.
Vapor from dephlegmator	156° F.
Oil:	
Fat from absorbers	78° F.
Fat from reabsorber	121° F.
Fat to exchangers	87° F.
Fat to preheaters	262° F.
Fat to evaporator	348° F.
Lean to exchanger	312° F.
Lean to coolers	111° F.
Lean to absorbers	60° F.
Water:	
Hot end of cooling tower—over coolers	64° F.
In basin	74° F.
Cold end of cooling tower—Over coolers	58° F.
In basin	61° F.
Stabilizer:	
Base	252° F.
Feed	163° F.
Top tray	127° F.

Gas from the well, at a temperature of around 130°, flows through the gas cooling coils in the cooling tower. It next passes into a Mist-D-Fier for separation of the condensate. Approximately equal quantities of water and drips are thrown out. The drips constitute about one-third of the plant production and have a gravity of 64, an initial of 80 and an endpoint of around 400°. This material has a dirty straw color. Upon distillation, it yields 90 per cent over at 325° F. The scrubber is equipped with a large integral float actuating a balanced valve which feeds the drips as fast as accumulated, to a heavy pressure vent tank. This vent tank in turn feeds by a similar float control into a small preheater and evaporator. The vapors from this evaporator join the vapor stream from the main evaporator, passing through a Mist-D-Fier baffle nest en route. No agitation steam is necessary in the evaporator. A close cut is effected, leaving approximately 10 per cent bottoms of around 24 gravity, which goes to the lease crude storage. To the float arm of the main scrubber is connected a very shrill gas-operated whistle in such manner that should the trap at the well stick, permitting a large slug of crude to come through, the float rises to higher than normal position and blows the whistle. From the base of the scrubber is a valved connection to a 2½-inch line leading to the lease crude storage, which can be quickly opened by the operator in such an emergency.

The gas leaving the Mist-D-Fier is distributed to the three absorbers through differential indicators. The absorbers have 16 froth plates packed off against a smooth inner shell. They have bolted heads. The gas leaving the tops of the absorbers passes into the outlet header, and then into the outlet Mist-D-Fier, and from the outlet Mist-D-Fier through two 6-inch back-pressure regulators to the distributing manifold.

General view of absorbers, towers and boiler plant.

The fat oil leaving the base of the absorbers is fed out through 1-inch balanced valves operated by heavy integral floats, reducing the pressure from 450 to 200 pounds. These lines discharge into a 4-inch header, which in turn discharges into a high-pressure vent tank protected by two 3-inch relief valves set at 225 pounds. The tank normally vents to the stack line through a back-pressure regulator set to maintain 200 pounds pressure. A float-controlled valve reduces the oil pressure from this vent tank as it flows into the low-pressure vent tank, which is carried at 35 pounds, and which is also well protected with relief valves. A float-operated remote control maintains a steady level in this tank by actuating a motor valve on the discharge of the fat oil centrifugal pump, which takes suction from this tank. The gas released in this low-pressure vent tank joins the stream of uncondensed still vapors from the condenser accumulator and passes into the fractionating reabsorber above the eighth plate from the bottom. This absorber is 4 feet in diameter and has 24 plates—the top 16 for absorbing, and the 8 lower ones for fractionation of the oil to liberate a considerable amount of the light undesirable fractions and prevent their recycling through the distillation system. A steam-heated drum, regulated by means of a recording controller, furnishes the base heat for fractionation.

This absorber has a high skirt, which puts the oil level about 8 feet above the ground and permits it to flow by static head into the low-pressure vent tank, where it combines with the main fat oil stream. The cold oil supplying this reabsorber is taken from the lean oil stream after it has been cooled in the heat exchangers, is picked up by a separate centrifugal pump, then forced through separate low pressure Cool-R-Units in the tower and through a flow indicator into the top of the absorber.

As has been said, the fat oil leaving the low-pressure vent is a combination of the flow of fat oil from the main absorber and from the fractionating reabsorber. This oil is picked up by the fat oil pump and discharged through a motor valve, which maintains a proper level in the vent tank. The oil then passes into the inner, or tube, circuit of the heat exchangers. There are two heat exchangers in parallel, each consisting of eight 60-foot passes. From the exchangers the fat oil flows to the steam preheaters—three in parallel—and thence to the evaporator. The preheaters are elevated approximately 14 feet above the water level in the boilers and the condensed steam returns direct to the shell of the boilers by gravity.

The evaporator contains 15 plates—11 stripping plates under 4 reflux wash plates. Live steam is used for agitation.

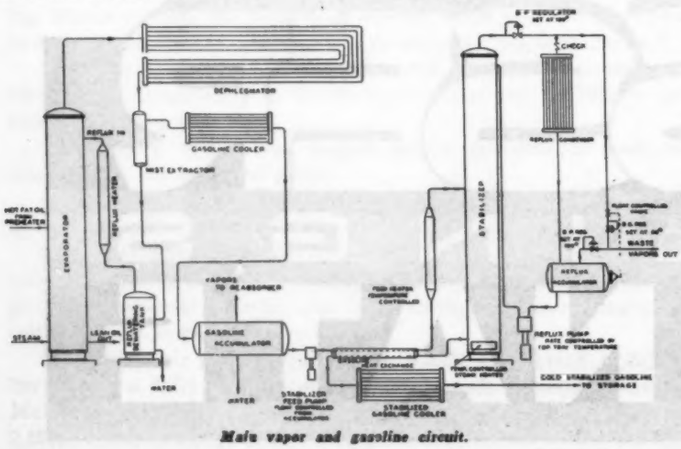
Flow of Lean Oil

The lean oil, after passing down through the stripping trays, flows into a large pressure tank, which in effect is merely an enlargement of the evaporator base. It is vented back to the base of the evaporator and it acts to take up the come and go of the oil in the system.

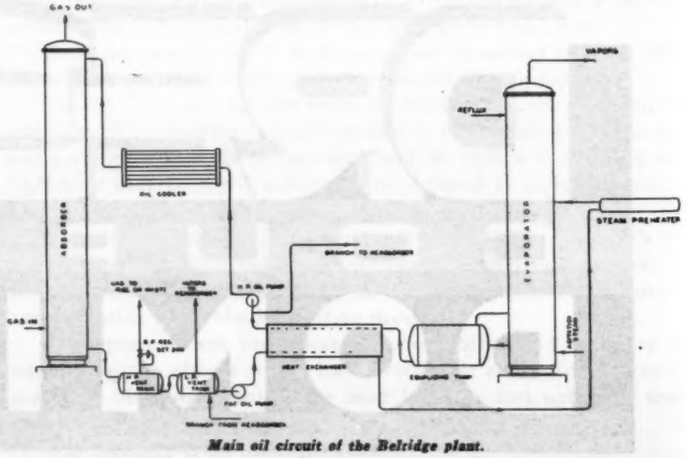
The evaporator pressure of about 35 to 40 pounds is sufficient to force the lean oil from this equalizing tank, as we call it, through the outer shell of the exchanger. It flows here counter to the cold oil and the exchange of heat, as in any exchanger. Here the fat oil is heated and at the same time the lean oil is cooled. From the exchangers the lean oil flows to the suction of the high-pressure centrifugal which discharges the oil to the cooling tower and then through

(Continued on Page 131)

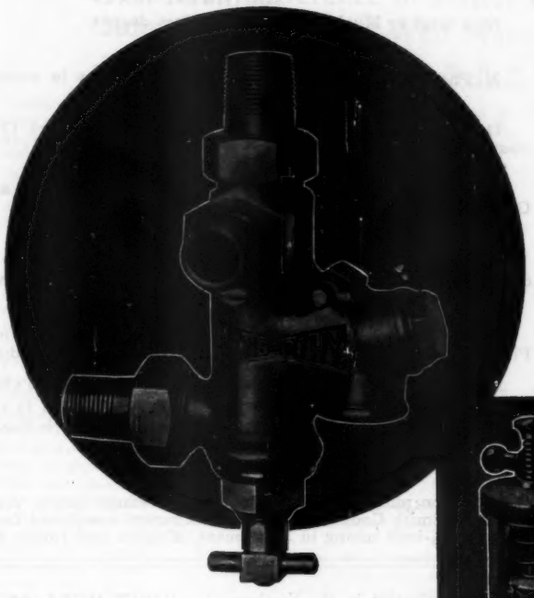
*Read before California Natural Gasoline Association at Los Angeles.



Main vapor and gasoline circuit.

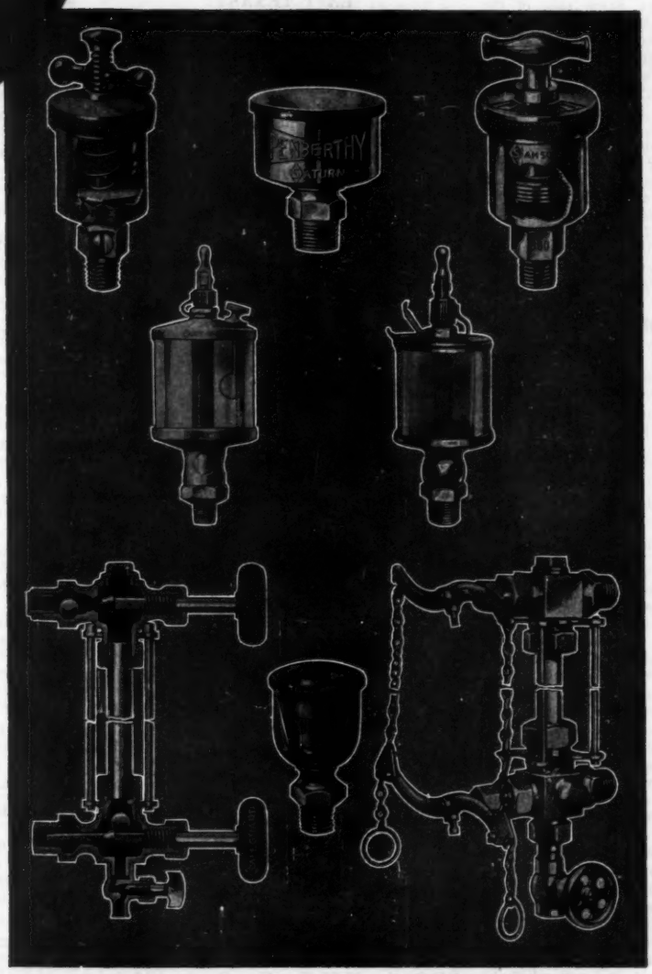


Main oil circuit of the Belridge plant.



ECONOMY SUGGESTS

PENBERTHY PRODUCTS



THE fact that such a large number of operating organizations in the "Close Buyer" class have for years used only these injectors, liquid level gages and lubricating devices, is significant of the fundamental economy of Penberthy Products.

These Penberthy Products are cast from new brass . . . not made from spun or stamped brass. The design and workmanship allow for the rough handling that is probable.

Penberthy Products are carried in stock by supply companies everywhere.

PENBERTHY INJECTOR COMPANY

DETROIT

ESTABLISHED IN 1886 CANADIAN PLANT, WINDSOR, ONT.

BIG GASSERS ON BOTH SIDES OF STATE LINE

CORNING, N. Y., May 2.—A 21,000,000-foot gas well was completed by the Allegany Gas Co. in its No. 2 Palmer in Farmington Township, Tioga County, Pennsylvania. The well is located a short distance from the company's No. 1 Palmer, completed last September, which well opened the Tioga gas field. Great care was used in drilling in No. 2 Palmer in order to avoid a recurrence of the trouble encountered in the big well on the Meaker farm, which blew uncontrolled for two weeks, the gas thus wasted approaching a daily production of 100,000,000 feet at the height of the well's production. The Oriskany sand was penetrated only a few inches in No. 2 Palmer when the big production came and the gas was turned into the line of the company.

In the same county the Lycoming Gas Co. got its first big showing in No. 1 Boom, in Lawrence Township, the well showing 100,000 feet of gas at 10 feet in the sand.

On the New York State side of the field the Wittmer Oil & Gas Properties' No. 1 Wyss in Wayne, Schuyler County, started at 10,000,000 feet. It is south of the same company's No. 1 Oleszewski, which was rated at 12,000,000 feet. There are now eight wells in the Wayne Field, which are rated as good for 50,000,000 feet if allowed to blow one at a time.

The Olean-Finger Lakes Oil & Gas Corp.'s No. 1 Ernest, near the Lamoka Canal, in the Dundee, Yates County Field, in New York State, is good for 1,500,000 feet at 1,721 feet.

The Leonard Drilling Co. has started drilling its No. 1 Hettick, near Towanda, Bradford County, Pennsylvania.

PIPE LINE COMPANIES PROTECT THEMSELVES

All the pipe line companies purchasing oil in Osage County, Oklahoma, advise that after April 8, 1931, they will withhold payment for the oil because of threatened litigation and the dispute of the titles to the oil and mineral rights in lands embraced by the Osage allotments. Questions that have been raised as to the operation and effect of the so-called Extension Act of March 3, 1931. The extension act extended the rights of the Osage Nation to share in all the minerals found in Osage County, and extended the time until 1958.

The pipe line companies advise as follows:

"We have come to the definite conclusion that under the present circumstances the companies are not justified in making payment account oil runs from Osage leases subsequent to April 8, 1931, unless the parties selling the oil shall furnish acceptable indemnity to cover the value of all oil run. In order to give all operators and lessees ample notice and opportunity to protect their interests, however, we will pay to the agency the royalties accruing on oil runs during the entire month of April, but withhold payment for the working interest oil for the portion of that month following April 8. Beginning with May 1, we will withhold payment of both royalty and working interest, but will continue to run the oil so long as that course is agreeable to the Osage Agency and the producers.

"We hope that shortly some arrangement may be worked out whereby the policy above outlined may be discontinued and we will be able to resume payments."

J. D. GILL NEW DIRECTOR

PHILADELPHIA, Pa., May 5.—John D. Gill was named a director of the Atlantic Refining Co. at the annual meeting of the company here today. The balance of the directorate was re-elected. In addition, J. W. Limberton and E. J. Henry were elected vice president of the company.

Late Fields

OKLAHOMA

Magnolia Petroleum Co.'s No. 1 Harris, NW cor. SW, Section 6-6-4, Pottawatomie County, north of the Asher Pool, found a showing of oil in the Wilcox sand at 4,455-63 feet. The well is a wildcat and many express the opinion it may open another producing area in the southern part of the Greater Seminole area.

Champlin Refining Co. and Hall and Briscoe's No. 1, in Block 7, in the SE. Section 3-11-3w, in the Oklahoma City Field, flowed 448 bbls. of oil in 35 minutes and the gas was estimated at 70,000,000 feet a day from the Wilcox sand at 6,310-6,450 feet. The well was shut in when the pressure began to cut the connections.

Production of crude oil from the Oklahoma City Field was 230,377 bbls. from 43 wells on the gauge of May 6. A total of 763 wells have been completed in the field to date.

EAST TEXAS

FORT WORTH, Tex., May 5.—Sinclair Oil & Gas Co.'s No. 1 Kinney, near the Smith County line but in Rusk County, located in the western part of the Juan Gardena Survey, 2½ miles southwest of the nearest production, was completed last night at a total depth of 3,675 feet for an initial production of 125 bbls. in 30 minutes through 2½-inch tubing is now pinched in waiting for pipe line connection.

The 168 producing wells in the Joiner Pool have been allowed an average daily production of 387 bbls. per well under the first proration schedule which went into effect May 1. Kilgore wells are allowed from 260 to 518 bbls. per well per day according to the size of wells and acreage. R. B. Latting has been appointed umpire for the Kilgore Pool.

CANADA

CHATHAM, Ontario, May 4.—Reports confirmed by Hudson's Bay-Marland Oil Co. state that oil has been struck at depth of 3,680 feet in the Keho Lake well of the company, 20 miles north of Lethbridge, Alberta.

GULF COAST

HOUSTON, Tex., May 5.—Humphreys Corp. has completed another good well on the west flank of Barbers Hill in No. 3 E. H. Winfree, which flowed 2,392 bbls. of pipe line oil in the first 24 hours through a nine-thirty-seconds-inch choke, pressure 610 pounds. Bottom of hole is 5,716 feet.

KANSAS

In Ellsworth County, Kansas, the wildcat test of the Gilmore Oil Co., No. 1 Sturm, in Section 31-17-9w, was drilling near the top of the conglomerate at 3,195 feet. The test is believed to be running favorably on structure and it is located near the discovery well, Slick, Pryor & Lockhart and others' No. 1 Heiken, in Section 33-18-9w.

Gypsy Oil Co.'s No. 1 Coleman, C SW NE Section 25-17-25w, Ness County wildcat, was fishing for a joint of casing at a total depth of 4,690 feet.

Graham Oil Co.'s No. 1 Rolander, SE cor. SW SW Section 30-18-2w, in the Anderson Pool, in McPherson County, located northwest of the Decker Field, was drilling deeper to test lower formations at 2,600 feet. The old total depth of the well was 2,300 feet, where it was completed as a gas well.

Barnsdall Oil Co. and others' No. 1 Turner, NW cor. SW Section 28-20-10w, in Rice County, a mile south of production in the Schurr Pool, found a hole full of water in the Silicious lime at 3,307-30 feet. The test will probably be abandoned.

Ash Drilling Co. and Connell and others' No. 1 Heckard, SE cor. NW Section 18-27-2, Sedgwick County, a half mile north of production in the Eastborough Pool, found a hole full of water in the chat and will be drilled to the Simpson sand. The total depth is 3,017 feet. Offset operators interested in drilling the test deeper are Lario Oil & Gas Co., E. B. Shawver, J. Hawes, L. A. Heckard and E. Hutton.

The most southwesterly test in the State, Argus Production Co.'s No. 2 Christopher, C NE Section 10-33-39w, Stevens County, was drilling at 5,295 feet. It is the deepest test in the Hugoton gas field and is drilling in search of oil production.

The deep sand production in the Ritz-Canton area was extended to the northwest a half mile by Madison, Lassen & Simmons' No. 1 Hale, SE cor. NE Section 24-19-2w. Oil rose to the top of the hole from the Viola at 3,397-3,400 feet. It is the eighteenth Viola producer in the area and is surrounded by oil and gas production in the chat. The well is located midway between the Decker gas field and the Ritz-Canton Field. The casing will be cemented and the well drilled deeper.

Carter Oil Co.'s No. 1 Lagree, SW cor. Section 16-19-2w, in the Ritz-Canton Field, was completed for 27,000,000 feet of gas from the chat at 2,900-50 feet.

NATIONAL SCOUTS CONVENTION

The National Oil Scouts convention will be held at the Adolphus Hotel, Dallas, Tex., May 11 and 12. This will be the association's eighth annual convention.

High Spots in Field News

CALIFORNIA

New deep zone in Ventura Avenue Field.

SOUTHWEST TEXAS

New sand in Muckelroy Pool, 100 feet deeper.

KANSAS

McPherson Field continues to spread. Activity in western gas leases.

OKLAHOMA

Oklahoma City wells holding up. Skelly well makes 11,470 bbls. in four hours.

NORTH LOUISIANA-ARKANSAS

Big well in Sabine Parish; Zwolle marl well estimated at over 5,000 bbls. Good gas wells in eastern Texas counties.

GULF COAST

Operators committee appointed to consider reducing allowable. Two more good wells at Barbers Hill. Second producing horizon at Leesville, La.

ROCKY MOUNTAIN AREA

Proration agreement in Eunice area, New Mexico. Unitization plan on Piceance Creek, Colorado, worked out. Gas strike in Harding County, N. M.

WEST TEXAS, NORTH TEXAS AND PANHANDLE

Four of nine deep producers at Big Lake to be shut in to conserve sweet gas. New Yates, Crane and Panhandle potentials. North Texas and Panhandle purchases increased.

EAST TEXAS

Proration put into effect expected to reduce output this week. Sinclair well near Smith County line, in Rusk County, completed for 125 bbls. initial through 2½-inch tubing in 30 minutes. Kilgore and Joiner Pools extended.

VISIT WILL INTEREST PIPE LINE ENGINEERS

Dr. Gordon N. Scott, United States Bureau of Standards, Washington, D. C., is coming to Tulsa Monday, May 11, for the purpose of making an inspection of pipe line coatings on the Stanolind Pipe Line Co. line south of Skiatook, Okla. It is understood that the coatings of about 15 companies will be examined that have been tested in accordance with the rules agreed upon under the A.P.I. co-operative test committee. Those interested in being present when this pipe is uncovered may secure detailed information by addressing William G. Heltzel, general superintendent, Stanolind Pipe Line Co., Sinclair Building, Tulsa. Okla., telephone 2-0101.

KENDALL TO ADD

BRADFORD, Pa., Apr. 30.—The Kendall Refining Co. has plans in progress for construction of an addition to its local refinery and a program of general improvement of existing facilities. More than $200,000 will be spent on the project, work on which will get under way early in May.

MRS. HARVEY SMITH DIES

HOUSTON, Tex., May 2.—Mrs. Harvey Smith, mother of Harvey S. Smith, widely known Gulf Coast oil man president of Harvey S. Smith, Inc., and L. P. Smith, vice president of the same firm, died at her home here following a brief illness.

SCORE SHEET ON OIL PRODUCTION

Below is shown the allotted average daily production in the United States from April 1 to October 1, 1931, suggested by the Oil States Advisory Committee, and the actual daily average production in the week ending May 2:

	Barrels			
	Allotted	Actual	Over	Under
Oklahoma	550,000	550,415	415	.....
Texas	714,000	968,756	254,756	.....
California	500,000	531,250	31,250	.....
Kansas	110,000	107,325	.....	2,675
Arkansas	50,000	46,860	.....	3,140
Louisiana	65,000	68,128	3,128	.....
New Mexico	40,000	41,403	1,403	.....
Rocky Mountain area	60,000	56,594	.....	3,406
Eastern states	110,000	110,000	.....	.....
Total	2,199,000	2,480,731	290,952	9,221

Total net average daily overproduction, 281,731 bbls.

Oklahoma City Wells Are Holding Up

Not Much Difference in Initial Production of Recent Wells and Older Wells. Skelly Well Makes 11,470 Bbls. in Four Hours

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The production of crude oil for the week ending May 2, shows an increase of approximately 5,500 bbls. a day over the previous week. The estimated production was about 550,400 bbls.

The Oklahoma Corporation Commission will consider the matter of ratable purchases of gas from the Oklahoma City Field at its next meeting. The commission will hear the petition of the Blackwell Oil & Gas Co. and Jones Brothers Drilling Co. asking that the buyers be required to take gas ratably as the crude oil purchasers do. One of the companies principally affected by the hearing is the Oklahoma Natural Gas Corp. which has franchises in the principal cities of the State.

It is expected the Corporation Commission will make a decision on the alleged violations of the proration order in the Oklahoma City Field, by the Morgan Petroleum Co. and Hall & Briscoe, Inc.

The Skelly Oil Co.'s No. 1 J. Hurt, NW cor., Section 2-11-3w, has the largest potential gauge of any well in the field under the April potentials taken to date. The well flowed 11,470 bbls. of oil in four hours from the Wilcox sand, which is at the rate of 68,800 bbls. a day.

The final tabulations of potentials in the Oklahoma City Field are expected to show little change from those taken in January. The new wells completed since that time show an average initial production as large as that of the older wells. A total of 493 wells tabulated for both the January and April potentials show a total for January of 5,888,450 bbls. and for April 5,687,035 bbls. of oil. Since January 24 wells have been added to the pool and gauged for April totaling 745,445 bbls. in 24 hours. Added to the total it brings the field to 517 wells with a potential of 6,432,480 bbls. The Oklahoma Corporation Commission, in fixing the allowable for the field, allows only one-third of the total potential as a working basis.

New Completions

During the week the following wells were completed in the Oklahoma City Field: Champlin Refining Co. and Hall & Briscoe's No. 1 in Block 19, Central Addition, located in the SW cor. SE, Section 3-11-3w, made 5,649 bbls. of oil in four hours and 35,000,000 feet of gas a day from the Wilcox sand at 6,301-6,460 feet. The well was delayed several days in being completed due to a leak in the connections. Dengail Oil Co.'s No. 1 Ransom, NE cor. SE SW NW, Section 10-11-3w, made 960 bbls. of oil the first hour and was shut in. The oil was found in sand at 6,525-6,640 feet. Tom Slick Oil Co.'s No. 1 Egbert, SE cor., Section 34-12-3w, in the north end of the field, was being prepared to make a production test. The sand was found from 6,224-6,455 feet. The well flowed 2,110 bbls. the first hour and 8,064 bbls. in four hours, with an estimated flow of 45,000,000 feet of gas a day.

Sale of Property

Another sale of Oklahoma City oil property was announced during the week by the sale of interests of the Century Petroleum Co. to the Operators Royalty & Producing Co. The consideration was not announced. The Operators Royalty & Producing Co. will take over the operation of the properties at once and an attempt will be made to end the receivership now effective with the Century Petroleum Co. The sale includes all of the holdings of Mr. and Mrs. Randerson in the Century Petroleum Co. and 80 per cent of their stock in the Century Corp. Included in the holdings are five producing wells in the Oklahoma City Field and two refineries, one located in the Oklahoma City Field with a capacity of 2,000 bbls. a day and the other in West Tulsa with a capacity of 1,000 bbls. a day. Ray M. Dunnett is president of the Operators Royalty & Producing Co., John M. Wheeler is secretary-treasurer, with S. V. Nelson, W. J. Doherty, E. F. Hamm, W. Dulaney, H. A. May and W. E. Disney, as directors.

The production of crude oil shows a large increase for the month of April over the previous month from the Oklahoma City Field. The gain amounted to almost 950,000 bbls. Production from the field during the month of April totaled 4,967,667 bbls., a daily average of 165,589 bbls. for the month. The total production for the month of March was 4,025,310 bbls. The actual gain was 942,357 bbls.

Nine new wells were completed during the month of April with an initial production of 48,298 bbls. These wells were only allowed to flow open for four hours. A total of 4,919,369 bbls. was produced by the old wells. There were a total of 761 wells completed in the Oklahoma City Field on April 30. The pipe line shipments from the area during the month of April totaled 4,926,091 bbls., a daily average of 164,203 bbls. compared to 4,086,597 bbls. during the month of March. The increase amounted to 839,494 bbls. The field reached its peak in both production and pipe line shipments during the month of April.

Production for the week ending May 2 from the Oklahoma City Field totaled 1,096,724 bbls., a daily average of 156,675 bbls. The pipe line companies purchased a total of 1,176,082 bbls. of oil from the field, a daily average of 168,011 bbls.

New Wells in Chandler Field

New producers in the West Chandler area added approximately 5,000 bbls. a day to the potential. Two wells were completed during the week increasing the potential from 22,500 to 27,500 bbls. Coline Oil Co.'s No. 2 Telford, SW cor. NW SE, Section 7-14-4, Lincoln County, flowed 4,320 bbls. the first 24 hours. The oil was found in Simpson sand at a total depth of 4,987 feet. The well ranks with the largest yet completed in the area. The other well completed was Tom Slick Oil Co. and Stanolind Oil & Gas Co.'s No. 2 Kentzleman, SE cor. SW, Section 7-14-4, was shot with 20 quarts and made 360 bbls. while cleaning out. The well will be given another shot before it is completed. The oil was found in sand from 4,975-5,004 feet. It made 600 bbls. of oil the first 12 hours before the shot. Other tests nearing the pay horizons were Magnolia Petroleum Co.'s No. 1 Wagner, NW cor. NE, Section 18-14-4, which was drilling the cement plug at a total depth of 4,891 feet. The operators were landing another string of casing to recement at a total depth of 4,906 feet. Same company's No. 1 Telford, SW cor. SE, Section 7-14-4, was drilling at 4,430 feet. Same operator's No. 2 Telford, in Section 7-14-4, was waiting for cement at a total depth of 4,990 feet.

Southern Operations

Field operations in the southern and southwestern part of the State were normal. Some of the operators were turning their attention to the East Texas Field. They were among the first to prospect new development of that area.

Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Corp.'s No. 6 Preston-Culp, NW cor. NE NE Section 6-5-9w, on the west edge of the Cement Pool, in Caddo County, is believed to be drilling in the Detrital zone. The test is the deepest ever drilled in the area and has had several showings of oil and gas. The latest showing was found in sand at 6,770-73 feet and it increased at 6,775 feet. The owners believe another showing of gas was found at 6,779 feet. The test is drilling with rotary tools and it is impossible to estimate the oil and gas showings.

Dry Holes in Tatums Area

In the Tatums Pool, in Carter County, two dry holes were completed and no new production was added. The dry holes were Louis Sikes' No. 1 Hopson, NE cor. NW NE Section 25-1s-3w, on the south side of the field, between two other dry holes. The test showed a small amount of oil when bailed from sand found at 2,134-2,526 feet. The total depth was 2,620 feet. The other dry hole was Magnolia Petroleum Co.'s No. 1 Burton, NW cor. SE NW Section 30-1s-2w, a quarter of a mile southeast of production, was found to be dry at a total depth of 4,115 feet. It was plugged back to test broken sands at 1,500-1,600 feet, which were found to yield a small quantity of oil.

Another test was drilling below the regular producing formation without showing oil or gas. Lesh and McCall's No. 2 Carter, NE cor. SW SW Section 14-1s-3w, an edge test, was drilling below 2,410 feet, without logging oil sand which other nearby wells are producing from. Amos Drilling Co. and others' No. 1 Sparks-Hooks, SE cor. Section 13-1s-3w, on the northeast edge of the field, was drilling at 1,900 feet, nearing the pay horizon.

Carter Oil Co.'s No. 1 Florence, NW cor. NE Section 11-3s-6w, in southern Stephens County, was being abandoned at 3,293 feet, in the Silicious lime. The test was located on a large block of acreage about 3 miles from the nearest production. It was drilled on a favorable geological structure, but as the Wilcox sand was not found no new tests are expected in the area for some time.

In the Kingston area in Marshall County, McCrory and McCrory's No. 1 Little, NW cor. SW Section 30-7s-6, is recementing casing after failing to get a water shutoff. The casing was cemented at 490 feet on top of what is believed to be an oil sand with the total depth of the test being 494 feet. It is located about a mile northwest of another producer recently completed by the same operators.

A Red River Wildcat

Love County has another test. Holmes and others' No. 1 Flanagan, NW cor. NW Section 2-8s-1, in the bend of the Red River, Love County, was spudding. It is being drilled on a block of 2,000 acres and is the second test to be drilled on the same block. The other test was drilled 2 miles southeast and was abandoned at a total depth of 2,513 feet.

Western Activities

Noble County is active in the Magnolia Pool, Magnolia Petroleum Co.'s No. 1 Roberts, SE cor. NE SE, Section 21-21-2w, was drilling Viola at 5,278 feet with nothing showing. Same company's No. 2 Young, SW cor. NW, Section 22-21-2w, was drilling at 4,200 feet. Northeast of Perry, in the Otoe Indian territory, Prairie Oil & Gas Co.'s No. 1 Green, NE cor. SW, Section 22-22-1, had Viola lime at 4,740 feet and was shut down at 4,745 feet, where it may be abandoned. Magnolia Petroleum Co.'s No. 2 Summers, SE cor. NW, Section 4-20-1w, found 9,000,000 feet of gas at 3,400 feet and was plugged back to 3,220 feet after the casing collapsed.

In Kay County, Boucher Oil & Gas Co.'s No. 1 Jefferson, NE cor. SW, Section 32-26-1w, near the Tonkawa Townsite, was drilling at 4,570 feet.

The Comar Oil Co.'s No. 1 Smith, SE cor., Section 18-22-5, in Pawnee County, has spudded. It is a wildcat north of the Pawnee Townsite.

During the week two wildcat tests in Garfield County found water with one

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 13-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Show oil 5,418-30 ft.; fishing.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 24-8-26w	Drlg. 2,275 ft.
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 430 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	Shut down 2,550 ft.
White et al's No. 1 Green, SW cor. Sec. 24-10-24w	Drlg. 3,300 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Shut down 4,665 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McGraw Oil Co.'s No. 1 Ward, NE SE Sec. 35-1-8	Shut down 1,040 ft.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Shut down 760 ft.

COMANCHE COUNTY

Croy & Young's No. 1 Cline, NW NE NE Sec. 9-3-10w	Abandoned 2,282 ft.
G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.
J. R. Travis' No. 1 Pickett, NE cor. Sec. 3-1-11w	Shut down 800 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w	Shut down 5,850 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w	Shut down 100 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-3-2w	Rig.
Skinner's No. 1 Elrod, SW cor. Sec. 13-2-2	Fishing 1,120 ft.

GREER COUNTY

French's No. 1 Murphy, SW NW Sec. 23-7-21w	Drlg. 1,550 ft.

HARPER COUNTY

Empire's No. 1 Bruce, C NE SW Sec. 12-25-20w	T. D. 7,925 ft.; plugged back to 7,500 ft.; shot 30 qts. 7,270-7,300 ft.; plugged back to 5,568-83 ft.; shot 50 qts.; abnd.

HASKELL COUNTY

Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19	Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19	Drlg. 200 ft.
Finefield's No. 1 Ogle, NW cor. Sec. 6-7-20	Fishing 600 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e	Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e	Shut down 2,387 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11	Shut down 1,645 ft.

(Continued on Page 173)

showing some oil. Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Corp.'s No. 1 Heitholt, NW cor. SE SE, Section 33-24-3w, was shut down at 5,092 feet with 500 feet of water in the hole. The test is located on a large block of acreage. Tom Slick Oil Co. and Ramsey Petroleum Corp.'s No. 1 Fulkerson, NW cor. NE NW, Section 15-20-4w, was dry in the Wilcox sand at 6,760-95 feet, and after drilling to the second Wilcox sand at 6,151-55 feet found 3½ bailers of oil and 3½ bailers of water an hour.

Wildcatting in Greater Seminole

A number of wildcat tests are expected to be started during the coming summer in the Greater Seminole area where extension areas have been found during the last few years. It is likely a number of small pools may be developed in that district and in the central part of the State.

The wildcats in the Greater Seminole area were being watched as any one of them may develop into a producer which would add additional development work to the area. The Burgher Oil Co.'s No. 1 Foster, NE cor. SE NW, Section 33-9-6, west of the Seminole Pool, was reported dry in the Simpson dolomite at 4,246 feet. The other wildcat which is nearing the pay horizons is Droppleman Drilling Co.'s No. 1 Jones, SE cor. NW, Section 21-8-3, south of Shawnee, in the central part of Pottawatomie County, was drilling at 4,750 feet, after finding a saturated core, yielding black oil at 4,715-30 feet, from what is believed to be the Hunton lime. Magnolia Petroleum Co.'s No. 1 Harris, NW cor. SW, Section 6-6-4, north of Asher Pool, in southern part of Pottawatomie County, was drilling in Viola at 4,260 feet where a showing of oil was found. The top was found at 4,135 feet. The test is located approximately 2½ miles from the nearest production in the Asher townsite.

R. H. Pierce & Co. and others' No. 1 Phillips, SW cor. SE, Section 8-9-6, in the new area between the East Earlsboro and Searight Pools, has been completed for 295 bbls. on the swab from the Wilcox sand at 4,228-51 feet. The well has made an accumulative recovery of approximately 4,000 bbls. of oil to May 2.

The Wewoka townsite pool, in southeastern Seminole area, has another Cromwell sand well. The Burke-Greis Oil Co.'s No. 3 Henshaw, NW cor. NE SW, Section 30-8-8, was plugged back from the Wilcox sand at 4,116-32 feet, and made 1,450 bbls. of oil. The casing was ripped from 3,830-68 feet and from 3,800-03 feet and after an 80-quart shot the well made 1,450 bbls. of oil in 24 hours.

Production in Second Wilcox

Another well expected to start a revival of drilling activities in the old Seminole Pool, was Indian Territory Illuminating Oil Co.'s No. 1 Bowlegs, NW cor. SE, Section 26-9-6, which has been producing four years. It was drilled deeper to the second Wilcox sand and swabbed 50 bbls. of oil in two hours while cleaning out. The second Wilcox sand was found at 4,209-22 feet.

Activities are increasing in the Holdenville area. A rig was being built for Blackwell Oil & Gas Co.'s No. 1 Holmes, SW cor. NE SW, Section 9-7-8. The new test offsets the Jarvis-Holms' No. 1 Roberts, in Section 9-7-8, which was recently completed for 500 bbls. of oil a day. Boettcher Oil & Gas Co.'s No. 1 Walker, C NW SW, Section 11-7-8, has cemented casing and is expected to be completed in a few days. Same company also announced a new location for No. 1 Schramm, C SE NW, Section 11-7-8.

Newman's "Vaseline Well"

A famous freak well of eight years, located in Hughes County, is still producing. It was completed for 30 bbls. of congealed oil or "vaseline," and is one of the few producing wells in the State that was never offset.

The well became known as the "vaseline well" because of the large quantity of paraffin content, the oil testing 48 degrees in gravity, and some estimate the oil testing 74 per cent lubricants.

The well was drilled by W. C. Newman in the NW cor. Section 31-8-12, and was completed in January, 1923, with an initial production of 30 bbls. of oil a day from sand at a total depth of 3,710 feet. Other tests drilled in the vicinity have been dry holes.

The oil after reaching the air becomes congealed within a few minutes and a coating of wax-like substance forms over the oil. The solidified oil can be scooped up with a shovel. In cold weather it is necessary to have a steam pipe touching the flow line from the well to the tanks to prevent clogging the lead line.

Some geologists express the opinion the well is located on a fault and believe that no other production would be found there. The well has produced approximately 100,000 bbls. since its discovery eight years ago. Companies owning acreage in the vicinity are holding the leases and at some later date other tests are expected to be drilled.

Carter County

Lewis Sikes and others' No. 1 Hopson, NE cor. NW NE, Section 25-1s-3w, is dry and abandoned at 2,622 feet. Carter Oil Co.'s No. 1 J. C. Taylor, SW cor. NW NW, Section 19-1s-2w, has been abandoned at 2,093 feet. Magnolia Petroleum Co.'s No. 1 Burton, NW cor. SE NW, Section 30-1s-2w, is a dry hole at 4,150 feet.

Cotton County

Colbert & Cole's No. 1 Thompson, SE cor. NW SW, Section 28-2s-11w, is dry and abandoned at 2,208 feet.

Creek County

Krasne Drilling Co.'s No. 2 Harry, SE cor. SW SE, Section 4-17-11, an old well, is preparing to deepen from 1,686 feet. Penmar Oil Co.'s No. 3 Tiger, NW cor. SW NW, Section 26-17-11, is an old well drilling deeper at 1,860 feet.

Grady County

J. B. Nichols has the rig up for No. 1 Williams, C S half S half, Section 24-4-8w. Oklahoma Gas Utilities Corp.'s No. 2 Rudley, SE cor. NE SE, Section 26-4-8w, has been completed for 23,500,000 feet of gas in sand 1,866-94 feet.

Haskell County

Indian Territory Illuminating Oil Co.'s No. 1 Holleman, C SW NE, Section 23-11-21, is dry and abandoned at 2,002 feet.

Jefferson County

C. D. Chenault's No. 1 R. C. Grover, NE cor. NW SW, Section 23-2s-6w, has been abandoned at 1,801 feet.

Muskogee County

H. L. Jolly's No. 2 Spaulding, SE cor. NE, Section 8-15-18, is preparing to deepen from 860 feet. Braman Oil Co. moved a machine in for No. 5 Jackson, SW cor. SE NW, Section 17-13-16. No. 1 W. Brown, SE cor. NE NE, Section 18-13-16, is rigging up. Denton & Marshall's No. 1 P. Rentie, SE cor. SW SE, Section 5-14-14, is dry and abandoned at 1,796 feet. A. Degan's No. 1 Kerr, C SW NE, Section 18-12-19, has been abandoned at 1,000 feet.

Latimer County

Limestone Oil & Gas Co.'s No. 1 Kilpatrick, C SE SE, Section 16-5-18, has been completed for 8,000,000 feet of gas in sand 2,715-40 feet.

LeFlore County

Sooner Oil & Gas Co.'s No. 1 Peck, SE cor. SW SE, Section 22-7-26, is dry and abandoned at 1,898 feet.

Okfuskee County

F. A. Havel's No. 1-A Likowski, CSL NE SW, Section 23-11-11, is rigging up.

Oklahoma County

Skelly Oil Co. has the cellar dug for No. 1 Gibson, NW cor. SW NE, Section 10-11-3w, Oklahoma City Pool. Shaffer and others made location for No. 1 Eggleston, NW cor. NE NW SW, Section 10-11-3w. Shaffer and others' No. 1 Giles, NE cor. SW, Section 15-11-3w, has been completed for 7,184 bbls. in four hours on 4-inch choke, producing from Wilcox sand 6,390-6,550 feet.

Pittsburg County

Utilities Production Co.'s No. 2 F. Vail, NE cor. SE SE, Section 8-7-18, is rigging up. No. 3 C. Bascom, SE cor. SW, Section 10-7-18, made 20,000,000 feet of gas from sand 1,811-1,903 feet.

Seminole County

The Prairie Oil & Gas Co. and T. B. Slick estate made location for No. 1 Sager, SE cor. SW, Section 8-9-6, East Earlsboro area. Empire Oil & Refining Co. moved the rig in for No. 1 Jackson, C SW SW, Section 17-7-8. Stanolind Oil & Gas Co.'s No. 2-B Haynes, NE cor. SW, Section 32-5-5, is drilling at 520 feet. Magnolia Petroleum Co.'s No. 1 Whitney, NW cor. SW SE, Section 24-5-7, has been abandoned at 4,291 feet.

Stephens County

Carter Oil Co.'s No. 1 Florence, NW cor. NE, Section 11-3s-6w, has been abandoned at 3,294 feet.

Tulsa County

Baxter and others' No. 1 Ellinghausen, SW cor. NE, Section 12-16-13, has been completed for 400,000 feet of gas in sand 925-31 feet.

Wagoner County

Hartman and others' No. 1-A J. Sarty, NW cor. SE SW NW, Section 7-17-16, is rigging up. Keener Oil & Gas Co.'s No. 1 Harrison, SW cor. NE, Section 18-19-16, is dry and abandoned at 690 feet.

The Argus Gas Co. has made a location northwest of Guymon, in Texas County, in the Oklahoma Panhandle, in the hope of extending the Hugoton, Kansas, gas field. If a commercial gas well is found in Texas County, an intensive drilling campaign is planned by the owning company and others.

Gypsy Oil Co. has been drawing on crude stocks in Oklahoma during the last few months. It now has eight empty tanks in the Three Sands area in Kay County and two full tanks. These are all of 55,000-bbl. capacity. The crude oil has been used to help fill the new 10-inch pipe line the company recently completed from the Glenn Pool district, south of Tulsa, to its refineries at Cincinnati, Toledo and Pittsburgh. The new pipe line is approximately 900 miles long. Part of the Gypsy Oil Co.'s storage oil has been moving south to Port Arthur, Tex., through the Gulf Pipe lines to the Gulf Refining Co.'s plant. The storage in the Greater Seminole area is also being reduced.

STOCKS OF CRUDE OIL DECLINE OVER 4,000,000 BBLS. IN MARCH

By E. B. Swanson
Chief Economist, Petroleum Economics Division*

According to reports received by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States during March, 1931, amounted to 69,397,000 bbls., a daily average of 2,239,000 bbls. This represents an increase in daily average of 73,000 bbls. over the previous month. The daily average output of Texas increased from 692,000 bbls. in February to 734,000 bbls. in March. Production in California showed a slight decline and the State dropped to third place among the producing states in favor of Oklahoma, where a material increase in output was recorded. The gain in output in Texas was due almost entirely to developments in the East Texas Field. Close to 60 wells, practically all of them gushers, were completed in the new East Texas fields during the month and the output rose to 93,000 bbls. from 24,000 bbls. daily in February. The increased output of Oklahoma was due primarily to an increase of about 50,000 bbls. in the daily allowance in the Oklahoma City Field.

Although production was higher, the demand for crude by refiners also increased, with the result that extensive withdrawals from crude stocks were continued. Stocks of crude east of California fell from 361,887,000 bbls. on March 1 to 357,663,000 bbls. at the end of the month; stocks in California showed a slight decrease during the same period.

Refined Products

The daily average crude throughput in March was 2,374,000 bbls., an increase over February of 44,000 bbls.

The daily average output of motor fuel continued to increase in March, when it amounted to 1,137,000 bbls., as compared with 1,119,000 bbls. in February. Imports of gasoline amounted to 1,607,000 bbls., a new high figure; exports totaled 2,946,000 bbls., less than half of the total exported in March, 1930. The daily average indicated domestic demand for motor fuel amounted to 1,001,000 bbls., a gain over March, a year ago, of nearly 1 per cent. Stock of motor fuel continued to increase and on March 31 amounted to 48,225,000 bbls., a gain over the previous month of close to 3,000,000 bbls. These stocks represent 44 days' supply, as compared with 43 days' supply on hand a month ago and with 46 days' supply on hand a year ago.

The refinery data of this report were compiled from schedules of 342 refineries, with an aggregate daily recorded crude-oil capacity of 3,721,690 bbls., covering, as far as the bureau is able to determine, all operations during March, 1931. These refineries operated during March at 64 per cent of their recorded capacity, given above, as compared with 335 refineries operating at 63 per cent of their capacity in February.

*Prepared under the supervision of G. R. Hopkins, Petroleum Economics Division.

GULF COAST OPERATORS SELECT COMMITTEE ON ALLOWABLE CUT

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., May 4.—Gulf Coast operators at a meeting here May 2 selected a committee of 11 to work out some plan for curtailing production of the Texas Coast and to act in an advisory capacity to the State Railroad Commission in carrying out its order issued April 4 limiting the coastal output to 140,000 bbls. Production of this district has been increasing steadily since the commission's order was issued and for the week ended April 25 was more than 20,000 bbls. (including Pettus and Refugio) above the allowable.

The advisory committee selected consists of R. H. Hargrove, United Gas Co.; W. A. Belstrom, Mills Bennett Production Co.; Joyner Cartwright, Sun Oil Co.; F. C. Sealey, The Texas Company; D. B. Harris, Humble Oil & Refining Co.; James Hutcheson, Rio Bravo Oil Co.; Joe Russell, Gulf Production Co.; George Peddy, Humphreys Corp.; F. J. Rothwell, Yount Lee Oil Co.; Gillette Hill, Moody-Seagraves-Morgan interests; L. A. Layne, Layne-Texas Co. At a meeting of the committee later, Mr. Hargrove was elected president, and Mr. Belstrom, secretary.

This committee will make a thorough study of the coastal production situation during the next few days and will meet Thursday, May 7, in the offices of the United Gas Co., Houston, to work out some plan for curtailment of production to co-operate with efforts of the Railroad Commission.

The meeting of coastal operators was called by the Railroad Commission, which was represented at the meeting officially by R. D. Parker, chief supervisor. C. V. Terrell, chairman of the commission, also was present and on request outlined the proration situation in the State, praised coastal operators for what they had done in the past in the way of holding down production and made a plea for further co-operation in assisting the commission.

Upon request of Mr. Parker, the coastal operators formed their own temporary organization for the meeting, electing H. F. Montgomery, legal representative of Mills Bennett Production Co., as chairman, and Joyner Cartwright, Sun Oil Co., Beaumont, secretary.

Production's Index to SUCCESSFUL PERFORMANCE

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A.P.I. DIAMOND BX—B8
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Look up the answer to the casing question either by turning back through decades of time for the evidence or by following the trend of today's leading operators. From the early days down to the present time the index clearly shows NATIONAL Diamond BX and B8 Casing predominating in successful performance.

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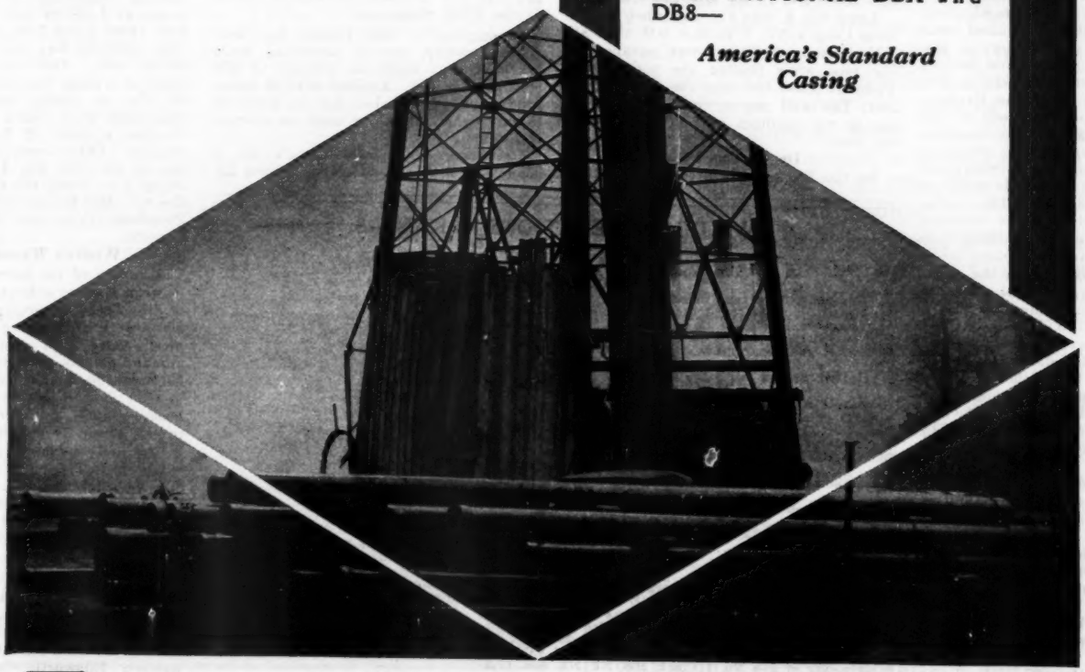

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Illinois Steel Company
Minnesota Steel Company
National Tube Company
The Lorain Steel Company
Tennessee Coal, Iron & R. R. Company
Universal Atlas Cement Company

McPherson Fields Continue to Spread

Both the Oil and Gas Areas in That County Show Signs of Increasing. Big Trade in Western Gas Leases

By W. A. Spinney
Staff Correspondent, Kansas Fields

Kansas production, which had been holding steady, shows a decline of approximately 2,000 bbls. a day for the week ending May 2. The estimated average daily production of the State for the seven days was approximately 107,350 bbls. McPherson is the most active county in the State and production was being extended in the Ritz-Canton area almost daily.

In the Voshell Pool, in McPherson County, production was extended. Stanolind Oil & Gas Co., Amerada Petroleum Corp. and others' No. 1 Kaufman, NW cor. SW Section 15-21-3w, was estimated to be flowing 25 bbls. an hour from chat at 3,035-75 feet, together with gas estimated at 4,500,000 feet a day. The well extends production a quarter of a mile to the southeast and is expected to be followed by considerable new development work. Tankage was being erected at the well.

In the Decker gas area northwest of the Ritz-Canton Pool, in McPherson County the McPherson Oil & Gas Co. and Derby Oil Co.'s No. 1 Chindberg, C NE NW Section 15-19-2w, is now making oil. It was shut in about 10 days ago as a 2,500,000-foot gas well, and when opened up began flowing oil. It will be given a production test early in the week.

Close Big Trade

The Saxet Co. of New York announced after a special meeting of stockholders held on May 1 that it had acquired 340,000 acres of proven gas territory in the Hugoton gas field in Stevens and Morton Counties, in southwestern Kansas, and in Texas County in the Oklahoma Panhandle. The holdings constitute one of the largest blocks of natural gas reserves under a single ownership and comprise all of the holdings of Moody-Seagraves interests in the area. The gas holdings are valued at $18,000,000. The stockholders voted to increase the common stock of the Saxet Co. from 2,000,000 to 4,000,000 no par shares. Common stock is to be issued in payment for the properties, in addition to perpetual warrants to purchase additional shares at $25 a share.

The Saxet Co. is controlled by the Moody-Seagraves interests, with O. R. Seagraves chairman of the board of the Saxet Co. The properties acquired by the Saxet Co. were the Argus Production Co. and Western Production Co. and 87½ per cent of the common stock of Missouri Valley Gas Co.

Fisher & Lauck, with 12 wells in the Eastborough Pool, in Sedgwick County, and 240 acres of leases in the area with approximately 2,000 bbls. of oil a day from these properties, announced they would terminate their pipe line connection with the Golden Rule Refining Co. May 27. They have been running the oil since last summer when the Eastborough Pool was being developed. The properties will be connected to the Magnolia Petroleum Co.'s line on May 27 and all the oil will be run by that company. It is reported that Fisher & Lauck may sell their properties to Magnolia Petroleum Co. after the present contract terminates with the Golden Rule Refining Co.

New Wells in Ritz-Canton

New wells added to the Ritz-Canton area were E. F. Jones and Shell Petroleum Corp.'s No. 1 Peterson, NW cor. SW SW, Section 7-20-1w, which filled up 1,500 feet with oil from the Viola lime at 3,406-10 feet. The well extends production a quarter of a mile south and also extends the deep sand a mile south. The well is located more than 3 miles south of the discovery deep sand well in the Ritz-Canton area.

E. Wakefield and Shell Petroleum Corp.'s No. 1 Koehn, NE cor. NW, Section 36-19-2w, on the west side of the Ritz-Canton area, made 861 bbls. of oil on a 12-hour test from the chat at 2,096-2,165 feet. The well is rated at 1,722 bbls. a day for the full 24-hour potential production.

Northeast of the discovery gas well on the east side of the Ritz-Canton Field, Darby Petroleum Corp.'s No. 1 Fletcher, SW cor., Section 16-19-1w, was completed for 29,000,000 feet of gas the first 24 hours with a rock pressure of 980 pounds. The gas was found in the chat at 2,914-57 feet.

A mile to the west of the above gas well, Prairie Oil & Gas Co. and Gypsy Oil Co.'s No. 1 Way, SE cor., Section 18-19-1w, found water in the Viola lime. It apparently defines the northern edge of the producing area in the Ritz-Canton Field. The water was found in the Viola at 3,443-60 feet. The test may be drilled deeper to the Silicious lime.

East of production about 3 miles Darby Petroleum Corp., Mulligan and Henderson & Henderson's No. 1 Summerfield, in Section 23-19-1w, may be abandoned at 3,539 feet. The tools were lost in the hole and after they have been recovered the test may be plugged as a dry hole.

Plains Oil Co. and others' No. 1 Unruh, SW cor. SE, Section 31-19-1w, found oil in the Viola at 3,413-23 feet. The oil rose 3,000 feet in the hole in four hours.

Lario Oil & Gas Co. and Shell Petroleum Corp.'s No. 1 Becker, SW cor. SE NE, Section 36-19-2w, was pulling the big pipe after finding the top of the Viola at 3,396 feet and the oil at 3,397 feet. The well proves considerable acreage in the southern part of the producing area.

Decker Gas Field

In the Decker gas area of the Ritz-Canton Field, Stearns & Streeter and others, at No. 1 Chindberg, C NE NW, Section 15-19-2w, were erecting tankage and preparing to take a potential production test. The well is estimated at 200 bbls. of oil and 1,000,000 feet of gas from the chat at a total depth of 2,969 feet.

New Producing Area

Another new producing area was opened in the eastern part of Reno County. Shell Petroleum Corp. and Continental Oil Co.'s No. 1 Blake, SW cor. SE SE, Section 23-23-4w, near the Haury Pool, is shut in, after making 8,500,000 feet of gas from the chat at 3,267-3,309 feet. It is located about 3 miles southwest of the recently completed test of Study Turner and others in Section 1-23-4w.

The daily average production of 13 producing wells in the southern part of Russell County, was 615 bbls. for the week ending May 2. These wells are being operated under some curtailment.

The Voshell Pool, in McPherson County, with 96 completed wells made an average of 16,700 bbls. of oil during the same seven days. Another test was nearing the pay horizon in the pool, Otstot and others No. 1 Kaufman, in Section 15-21-3w, on the southeast edge of the pool, had the top of the chat at 3,035 feet, where it was showing 3,000,000 feet of gas. It will probably be drilled deeper to the Viola formation.

Production in Ellie County has been holding steady, the 21 producing wells in the county made an average of 368 bbls. of oil a day. Another wildcat where production was pinched was in Edwards County, where the three made an average of 100 bbls.

Producers & Refiners Corp.'s No. 3 Thompson, SW cor. SE NW, Section 21-20-10w, Rice County, was standing full of oil and shut in. The oil showing was found in the Silicious lime at 3,327-44 feet. The well extends production a quarter of a mile to the north on the west side of the Schurr Pool, near Raymond. All the other producing wells in the pool were shut in awaiting a pipe line connection. The pool has an estimated potential of 15,000 bbls. of oil a day.

The wildcat test of Graham Brothers and Barnsdall Oil Co.'s No. 1 Turner, NW cor. SW, Section 28-20-10w, had a hole full of water in the Schurr sand at 3,764-68 feet. The test was underreaming to lower the casing and a fishing job developed at 3,300 feet. It will be drilled to the Silicious lime which is expected near 3,375 feet.

The wildcat test of Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Gray, C NE, Section 11-24-13w, a wildcat in Stafford County, has spudded. The test is located about 14 miles southwest of the same company's wildcat producer in Township 22-11w, which is shut in.

Promise Another Pool

Prospects were promising for another oil pool in Russell County, 6 miles southeast of Russell. Stearns-Streeter Co. and others' No. 1 Miller, SE cor. SW SE, Section 30-14-13w, found six different showings of oil and gas in the test while drilling. Showings of oil and gas were found at 1,880-96 feet, the second 2,285 feet, third 2,306 feet, fourth 2,355 feet, fifth 2,560-67 feet, and the sixth at 2,630-39 feet. The test is located on a block of acreage core drilled by the Skelly Oil Co. on which favorable structural conditions were found. The Skelly Oil Co. has a block of 1,500 acres in the vicinity. Other companies owning acreage in the area are Empire Oil & Refining Co., Tulsa Oil Co., Prairie Oil & Gas Co., Mid-Kansas Oil & Gas Co., Shell Petroleum Corp. and Midwest Exploration Co.

Western Kansas Leasing

A survey of the acreage under lease in western Kansas indicates that at the first of the year approximately 12,500,000 acres were under lease to the oil companies. Since that time a considerable amount of this acreage has been turned back to the landowners. It is also estimated that the revenues from oil and leases rentals and bonuses rank second in the State. If conditions were normal in the oil industry the oil companies would probably be drilling from 500 to 800 wells in the State. As it is generally believed that the central and western part of the State will produce more oil and gas than has ever been found in any of the other fields in the State since oil was discovered.

Ellsworth Arch a Large Field

The Ellsworth Arch, on which oil has been found in northeastern Stafford County, western Rice County and southwestern Ellsworth County, runs in a southwest-northeast direction through these counties and makes a northwesterly turn, making a cross trend through Russell County, in a southeast northwest direction, on which several large wells and pools are located.

Butler County is rated among the greatest of American oil fields, but the oil area in Butler County is only a small fraction of that known as the Ellsworth Arch. Some express the opinion the Ellsworth Arch will produce here and there over an area of some 200 miles. Eleven different oil-producing pools have already been found along the trend, of which five are without pipe line connections.

Chase County

Kingwood Oil Co. moved a machine in

(Continued on Page 105)

WILDCAT OPERATIONS IN KANSAS

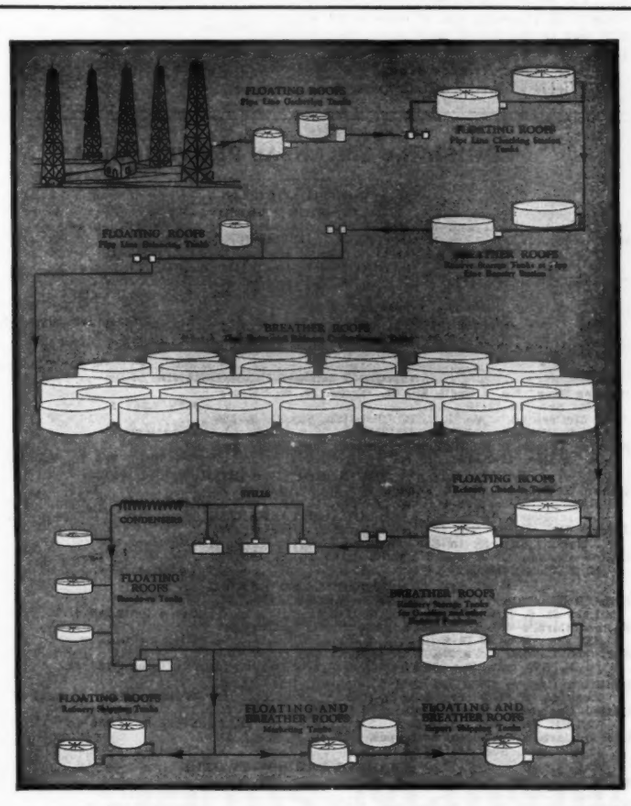
(Descriptions are East unless marked otherwise)

Company, farm and location—	Remarks:
BARTON COUNTY	
Syndicate Oil Co.'s No. 1 Boerts, NW SE SE Sec. 13-18-12w	Fishing 2,140 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Shut down 2,065 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,600 ft.
CLAY COUNTY	
Crystal Oil et al's No. 1 Tivier, SW cor. Sec. 19-8-2	Drlg. 2,495 ft.
COFFEY COUNTY	
Heyburg's No. 1 Kroft, SE SW SE Sec. 30-22-14	Shut down 1,300 ft.
Roberts et al's No. 1 Hay, SW SE NW Sec. 32-22-15	Shut down 1,250 ft.
COWLEY COUNTY	
Fisher et al's No. 1 Hurt, C SW SE SE Sec. 11-34-3	Rig.
Roth & Farout's No. 1 Reedy, SW NW NE Sec. 8-32-8	Shut down 1,040 ft.
DICKINSON COUNTY	
Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-3	Shut down 3,850 ft.
ELLSWORTH COUNTY	
Gilmore Oil et al's No. 1 Sturm, NW SW Sec. 31-17-9w	Drlg. 3,010 ft.
Hershey et al's No. 1 Schultz, C NE Sec. 9-14-8w	Drlg. 650 ft.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Silicious 3,255-71 ft.; 117 bbls. 2 hrs.; shut in; est. 2,000 bbls.; no pipe line connection.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Shut down 1,120 ft.
Milton et al's No. 1 Kester, SE NE Sec. 6-14-9w	Drlg. 2,095 ft.
FORD COUNTY	
Carter Oil Co.'s No. 1 Everett, C NE Sec. 22-29-21w	Drlg. 2,714 ft.
Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Drlg. 4,783 ft.
GRAHAM COUNTY	
Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Drlg. 4,052 ft.
HARPER COUNTY	
Beeler et al's No. 1 Bear, C NE Sec. 21-36-6w	Shut down 1,930 ft.
HARVEY COUNTY	
Empire-Shell's No. 1 Showalter, NW SE Sec. 23-23-2w	Drlg. 3,330 ft.
KINGMAN COUNTY	
Skelly Oil's No. 1 Miles, NE cor. Sec. 30-27-10w	1,635-40 ft. 2,000,000 ft. gas; at 2,005-20 ft. 6,000,000 ft. gas; at 2,133-42 ft. 3,000,000 ft. gas; showing oil 3,385 ft.; T. D. 3,441 ft.; S. D.; estimated at 600 bbls. a day.
LYON COUNTY	
Sheedy et al's No. 1 Brown, C W half SE, Sec. 10-20-11	Rig.
MARION COUNTY	
Midwell's No. 1 La Master, NW cor. Sec. 31-22-4	Shut down 650 ft.
McPHERSON COUNTY	
Henderson & Holden's No. 1 Sommerfield, NE NW Sec. 23-19-1w	Showing 25 bbls. of oil and 50 bbls. of water a day; drlg. 3,450 ft.
MORTON COUNTY	
Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 22-34-43w	Fishing 8-in. csg. 3,460 ft.

(Continued on Page 168)

Part of a farm of Horton tanks, all equipped with Wiggins Breather Roofs — Sinclair Oil & Gas Co., Oklahoma City field.

Do your reserves for depreciation also cover oil?



STORED under ordinary cone roofs, oil or gasoline is subject to depreciation, the same as other oil-field property. This depreciation is both in quality and quantity; the result of vapor loss through evaporation and consequent lowering of gravity.

A 1% volumetric loss of the lighter fractions will decrease the gravity of an entire tank of crude about .4 degree A. P. I. At the present price differential of 2 to 3 cents per degree A. P. I. gravity, the average loss from a .4 degree drop is approximately 1 cent per barrel on the entire amount of oil remaining. With an 80,000 bbl. tank of crude, this depreciation amounts to $800. In addition there is the volumetric loss, which with $0.75 crude, brings the total annual loss to $1,400. The loss is proportionately greater with gasoline.

Wiggins Breather Roofs are adapted to conditions in many of the storage tanks through which oil passes, as indicated in the chart at the left. They stop practically all evaporation loss from full standing storage, by removing the conditions under which daily breathing occurs. They are steel roofs, fastened to the top angle of the tank shell, and flex up and down to accommodate vapor volume changes due to temperatures. No vapor is vented out, nor is air drawn in; therefore the fire hazard is greatly decreased. The vapor under the roof is too saturated to ignite.

Any new or existing tank may be equipped with a Wiggins Breather Roof. Also, low pitch steel cone roofs in good condition can be converted to Breathers at a reasonable cost. Our nearest office will gladly supply quotations and full information concerning Breathers.

STOP FIRE AND EVAPORATION – CUT CORROSION LOSSES

CHICAGO BRIDGE & IRON WORKS

Dallas	3341 Burt Bldg.	Detroit	1514 Lafayette Bldg.	Los Angeles,	1323 Subway Terminal Bldg.
Houston	1119 Electric Bldg.	Cleveland	2204 Midland Bank Bldg.	Boston	1517 Consolidated Gas Bldg.
Tulsa	2406 Exchange Bank Bldg.	New York	3147 Hudson Terminal Bldg.	San Francisco	1054 Rialto Bldg.
Birmingham	1536 Fiftieth St., N.	Philadelphia	2615-1616 Walnut St. Bldg.	Seattle	4323 Smith Tower
Chicago	2128 Old Colony Bldg.			Havana, Cuba	Apartado 2507

WIGGINS ROOFS

OGJ 5-7 Gray

Big Well in Sabine Parish, Louisiana

Lyons & Neely Estimate Their Zwolle Marl Well at More Than 5,000 Bbls. Potential. Three Large Gas Wells

By J. R. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., May 4.—One good producing well from the Zwolle marl and three big gassers in widely scattered areas featured activities in this division this week. Lyons & Neely's No. 1 Baird Co., Section 1-7-11, Sabine Parish, was completed flowing 1,200 bbls. daily, pinched in, from a total depth of 2,415 feet. Due to faulty casing, a small amount of fresh water has broken in and another string of casing may be run in the hole. The potential open flow of the well is placed by the owners at between 5,000 and 10,000 bbls. daily if allowed to flow wide open. The well is in the eastern extension of the Zwolle Field which was recently proven up by the completion of Merritt's No. 1 Byrd in this same section.

The United Gas Public Service Co. added a good gasser in the deep test area of Rhodessa, North Caddo Parish, with the completion of its No. 1 Fortner which gauged 29,748,700 feet of gas from a total depth of 5,591 feet. The company's No. 1 Emmons, a mile northeast, was a disappointment, however, when it produced only 4,635,000 feet of gas in 24 hours from 5,541 feet. The company is killing this well and arranging to deepen with the expectancy of increasing the gas flow. The United Gas Co. also completed a huge gas well in Richland Parish. Its No. 3 Earle, Section 25-17-5, gauging 42,804,000 feet of gas at 2,436 feet. Their No. 4 Earle registered only 3,000,000 feet of gas from 2,479 feet and will be deepened.

Panola County, East Texas, added another good gasser during the week when Arkansas-Louisiana Pipe Line Co. brought in its No. 13 Louis Werner, Jordon Survey, making 21,300,000 feet of gas from a total depth of 4,727 feet. The rock pressure on the well registered 1,800 pounds in 30 minutes. The completion of this well is expected to stimulate deep drilling activity in that section for gas, especially since proration has gone into effect in the East Texas fields.

Busy in Border Counties

The activity of wildcatters continue unabated with 17 new operations reported for the week. Harrison County in East Texas led the list with six, despite many recent failures in that county. An interesting test will be Thomas & Kinsey's No. 1 J. R. Watson on a 4-acre tract within the city limits of Marshall. William H. Atkinson has derrick up to drill No. 1 O. H. Hays, J. H. Chappin Survey, in Harrison, and Everett Production is moving in rig on its No. 1 Sypert, E. M. Wilder Survey. Gholson and others will make a test of No. 1 Bivens Farm Co., Thomas Toby Survey, and O. O. Olford and others have made a location for No. 1 Bolding, W. W. O. Stanfield Survey.

In Shelby County, Bradley & Kadane are drilling at 500 feet on their No. 1 Ashberry, G. W. Mitchell Survey, and E. L. Chapman is below 3,000 feet on his No. 1 Pickering Lumber Co., C. E. Henry Survey. This test is about 3 miles from the Louisiana state line opposite the town of Logansport, La. Henry Maulding is drilling at 1,520 feet on No. 1 Frost Lumber Co., A. D. Fountain Survey. The Sloan Prospecting Co. has spudded in on No. 1 Sanford, M. M. Vann Survey, and is drilling at 2,800 feet on No. 1 Windham, H. English Survey.

Mississippi Operations

The Gulf Refining Co. is drilling at 4,225 feet on No. 1 Box, Section 11-2-15, Clark County, Mississippi, and in Clay County, Ohio Oil Co. is straightening hole to 3,526 feet on its No. 1 Cantrell, Section 16-15-5. This will be a deep test on a block consisting of over 25,000 acres assembled by this company. In Grenada County, Carter Oil Co., after abandoning No. 1 Dubard, Section 18-22-4, at 4,012 feet, has skidded the derrick 300 feet and is drilling No. 2 Dubard at 800 feet. M. L. Culley and others have derrick up to drill No. 1 Owen in Section 2-8-9, Scott County. The Dixie Petroleum Co. is making good progress on No. 1 Henry, Section 36-17-4, Warren County, drilling at 1,327 feet after setting 12½-inch surface casing at 120 feet. The Eagle Bend Oil Co. is rigging up to drill No. 1 Kiger, Section 9-18-2, in Warren County. In Winston County of Mississippi Drilling Co.'s No. 1 Scarborough, Section 15-13-14, is temporarily shut down at 2,797 feet, and Collett and Carter Oil Co. have recemented 8¼-inch casing at 2,428 feet on their No. 2 Blackmer, Section 14-11-4, in Yalobusha County.

Field Work in Arkansas

Drilling operations in Arkansas have steadily decreased during the past month, especially in the wildcat counties. J. H. James, trustee, has cored white said from 2,505-10 feet in his No. 1 Fordyce Lumber Co., Section 11-9-15, Dallas County. A drill stem test will be made at this depth. In Pope County, Arkansas-Louisiana Pipe Line Co. is drilling in shale at 3,610 feet on their No. 1 Baird, Section 11-7-20, after having set 6⅝-inch casing at 3,403 feet. This company, in the same county, is cleaning out a cave-in at 4,322 feet in its No. 2 McFaddin, Section 15-9-21.

Daily Average Runs

The fields showed a net decrease of 15 bbls. in daily pipe line runs for the week. Daily average runs for the several pools were:

North Louisiana	
Caddo, light	7,465
Caddo, heavy	2,770
Homer	3,375
Haynesville	5,980
DeSoto and Red River	2,715
Elm Grove	500
Bellevue	560
Cotton Valley	1,730
Urania	4,540
Pleasant Hill	425
Sarepta-Carterville	1,170
Zwolle	7,345
Holly	570
Total North Louisiana	39,045
Total previous week	39,130
Decrease	85
Arkansas	
El Dorado	3,610
Smackover, light	4,210
Smackover, heavy	31,615
Stephens	850
Nevada	1,010
Lisbon	770
Champagnolle	2,870
Bradley	50
Urbana	1,875
Total Arkansas	46,860
Total previous week	46,790
Increase	70
Total both states	85,905
Total previous week	85,920
Decrease	15

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location—Remarks:

Coyle Bros.' No. 1 Lawhorn, 300 ft. N, 300 ft. E, SW cor. SE NE, Sec. 15-16-3.....S.D. 2,854 ft.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 16-22-14.....S.D. 2,950 ft.

Flint River Oil Co.'s No. 1 C. L. DeMoss, 200 ft. S and E, NW cor. SE NW, Sec. 23-22-13.....Began Apr. 23; set 12-in. 236 ft.

Dr. W. N. Hankins' No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11.....Began Apr. 27; drlg. 120 ft.

Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13....Arranging to deepen; T.D. 1,600 ft.

CADDO PARISH

Garry M. Gordon's No. 1 Hatcher, 560 ft. E, 600 ft. S, NE cor. NW, Sec. 11-17-15.....Location.

Pelican Nat. Gas Co.'s No. 1 Cooper et al, 1,310 ft. E, 1,964 ft. S, NW cor., Sec. 29-18-14.....Drlg. 1,383 ft.

United Prod. Co.'s No. 1 Emmons, 1,337 ft. E, 660 ft. N, SW cor., Sec. 27-23-16.....4,635,000 ft. gas 5,541 ft; arranging to deepen.

United Gas Public Service Corp.'s No. 1 Fortner, 330 ft. S, 330 ft. E, NW cor., Sec. 5-22-16.....29,748,700 ft. gas 5,591 ft.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4.....Derrick.

Hudson et al's No. 1 Burton, Sec. 35-12-2e.....S.D. 2,799 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6.....S.D.; W.O. 3,097 ft.

CLAIBORNE PARISH

Baird Bros. et al's No. 1 Whittaker, 600 ft. N, 400 ft. W, SE cor. NE, Sec. 30-20-7.....S.D. 3,000 ft.

CONCORDIA PARISH

Joe Marr et al's No. 1 Maxwell, C, Sec. 35-3n-8e.....S.D. 3,622 ft.

United Gas Public Service Co.'s No. 1 Hughes, 660 ft. S, 45° 30" E, 660 ft. N 45° 30" E of NW cor., Sec. 49-8-10.....Rig up.

DE SOTO PARISH

Dupree-Fountain's No. 1 J. M. Nabors, 350 ft. S, 350 ft. W, NE cor. NW, Sec. 5-13-11.....Coring 2,400 ft.

Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Weichert's), NE SE, Sec. 31-14-15.....S.D. 2,350 ft.

C. D. Neff et al's No. 1 Ramsey, 1,000 ft. W, 400 ft. S, NE cor. SE, Sec. 33-13-16.....S.D; W.O; bit in hole 3,000 ft.

(Continued on Page 98)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH

Company, farm and location—Remarks:

H. I. Morgan's No. 13-A Kendrick, 669 ft. E, 330 ft. S, NW cor. SE SE, Sec. 22-19-11.....Drlg. 915 ft.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Edgar, 1,460 ft. S, 1,980 ft. E, NW cor., Sec. 17-16-15.....Temporarily abd.

Calatex O. & G. Co.'s No. 1 McAnn-Alfred, 1,310 ft. S, 970 ft. E, NW cor., Sec. 17-16-16.....Location temporarily abd.

CADDO PARISH—OIL CITY

Trio Corp.'s No. 1 Levee Board, 212 ft. S, 500 ft. E, NW cor., Sec. 17-20-15.....Set 6-in. 2,100 ft; T.D. 2,265 ft.

CADDO PARISH—PINE ISLAND

Haynes Bros.' No. 2 Spell, 956 ft. W, 200 ft. N, SE cor. SE, Sec. 15-21-15.....S.D. 3,962 ft.

J. T. McCormick's No. 1 C. B. Christian, 330 ft. S, 300 ft. W, NE cor. SW, Sec. 27-21-15.....Location.

Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15.....Set 10-in. 150 ft; S.D.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 2-20-4.....Location.

OUACHITA PARISH

Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4.....Location.

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4.....Location.

RICHLAND PARISH

Hope Prod. Co.'s No. 2 C. M. Noble Hrs., 2,838 ft. W, 1,980 ft. S, NE cor. SE, Sec. 36-16-5.....Set 6-in. 2,288 ft.

Palmer Corp.'s No. 1 Clement, 3,960 ft. N, 1,320 ft. E, SW cor., Sec. 10-16-6.....Rigging up.

Southern Carbon Co.'s No. 1 J. O'Neal, 660 ft. N, 760 ft. E, SW cor., Sec. 36-17-6e.....Set 6-in. 2,285 ft.

Southern Carbon Co.'s No. 2-B Thomason, 1,980 ft. S, 2,080 ft. W, NE cor., Sec. 23-16-6.....Waiting on cmt. 2,285 ft.

United Carbon Co.'s No. 1 Mann, 1,320 ft. S, 1,921 ft. W, NE cor., Sec. 12-16-5e.....Set 6-in. 2,285 ft.

United Carbon Co.'s No. 2 Cooper, 660 ft. N, 3,551 ft. E, SW cor., Sec. 13-16-6.....Location.

SABINE PARISH—ZWOLLE

W. M. Coats' No. 2 Sabine Lbr. Co., SW cor. SW NW, Sec. 1-7-12.....Drlg. 2,290 ft.

Hawkins et al's No. 1 Moran, Sec. 1-7-11.....Coring 2,200 ft.

O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12.....S.D. 1,230 ft.

Jordon Drlg Co.'s No. 2 La. Long Leaf Lbr. Co., Sec. 2-7-11.....Derrick.

Lyons & Neely's No. 1 Baird Co., Sec. 1-7-11.....Recemented 6-in. 2,415 ft.

H. H. Alvord, Jr.'s No. 1 Sabine Lbr. Co., 200 ft. S, 175 ft. W, NE cor. SE NW, Sec. 11-7-12.....Drlg. 2,010 ft.

Ohio Oil Co.'s No. 8 Bowman-Hicks, 330 ft. N, 330 ft. E, NW cor. NE, Sec. 2-7-12.....Set 6⅝-in. 2,200 ft.

Pelican Nat. Gas Co.'s No. 9 La. Long Leaf Lbr. Co., 990 ft. W, 655 ft. N, SE cor. SW SE, Sec. 3-7-11.....Began Apr. 28; drlg. 50 ft.

Sabine Royalties Co., Inc.'s No. 1 Hill, 400 ft. S, 200 ft. E, NW cor. NE NE, Sec. 5-7-11.....1,900 ft. oil in hole; waiting on standard rig.

The Texas Co.'s No. 2 Stille, 330 ft. S, 333 ft. E, NW cor. SW, Sec. 33-8-11.....Began Apr. 27; set 10-in. at 75 ft; drlg. 376 ft.

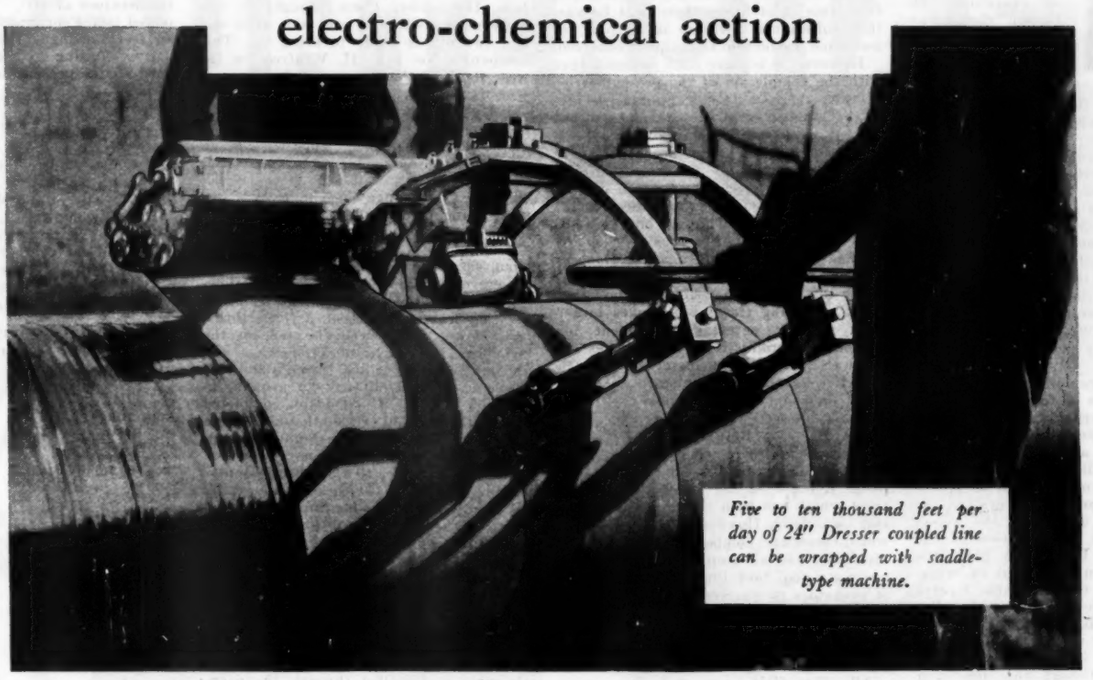
Houston-Sabine Prod. Co.'s No. 1 Sabine Lbr. Co. (was Triangle Pet. Co.'s No. 2 Sabine Lbr. Co.), 330 ft. N and E, SW cor., Sec. 36-8-12.....Rig up.

J. C. Walton's No. 1 Sabine Lbr. Co., 300 ft. S, 300 ft. W, NE cor. NW, Sec. 11-7-12.....Tested 2,376 ft; S.O; W.O.

(Continued on Page 126)

wrap your pipe coating

for SECURITY against moisture penetration .. soil stress .. and electro-chemical action



Five to ten thousand feet per day of 24" Dresser coupled line can be wrapped with saddle-type machine.

ASBESTOS FELTS, because of their strength, immunity to rot and decay, and resistance to electrical and chemical action, have for many years provided the ideal reinforcement in all types of waterproofing construction.

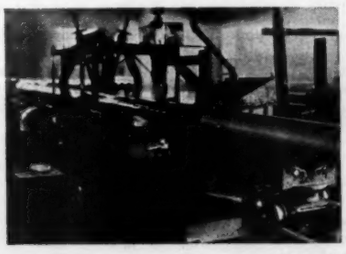
Owners of more than 10,000 miles of pipe lines have purchased security against corrosion by incorporating J-M Asbestos Felt Wrapper in their pipe protection. The Asbestos Felt Wrapper adds to the waterproofing provided by the bitumen coating and successfully combats electrolytic and galvanic actions.

It distributes the clod pressure and takes the shear and pull of soil action.

This permanent protection afforded by including J-M Pipe Line Felt Wrapper is secured at but a fraction of the cost of reconditioning.

The Johns-Manville corps of engineers is especially qualified to discuss pipe-line protection.

Get in touch with our local office or address Johns-Manville, 292 Madison Ave., New York City.



Johns-Manville Asbestos Pipe Line Felts being mill-wrapped under exact conditions of temperature control.

Johns-Manville Pipe Line Felts

Johns-Manville Felts can be applied bonded or unbonded — by hand or by machine —in mill, yard or field.

Two More Good Wells at Barbers Hill

Second Producing Horizon Found at Leesville, La Fourche Parish, Louisiana. Slight Extension at Blue Ridge Dome. Reducing Allowable

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., May 4.—The question of reducing production of Texas coastal fields to a maximum allowance of 140,000 bbls. daily to comply with the Railroad Commission's order issued April 4 has been the chief point of interest among coastal operators. Although the past week there was a decrease in output, the fact that the trend has been upward and during the week ended April 25 production reached a figure approximately 20,000 bbls. above the allowable, has caused considerable concern, especially in view of almost certain further substantial gains from one or two fields.

The first step in a new move to bring production within the allowable was taken Saturday at a meeting of coastal operators in Houston when an advisory committee was chosen to work out plans for co-operating with the Railroad Commission in carrying out the latter's order of April 4. This committee will meet May 7 following a study of the coastal situation.

There is considerable speculation as to what procedure can be followed in reducing the coastal output. The nature of fields and development in this district have been accepted as not being favorable to proration as followed in other areas by ratable takings of oil based on potentials, and under previous proration orders reduction of output to the allowable has been left to operators of the individual fields. Under this plan, the operators have been successful in bringing production to the allowable figures by curtailment of development, primarily, that is, limiting drilling to obligated tests. In addition all new wells are supposed to have been pinched in to a maximum of 500 bbls. daily although this provision has not been adhered to strictly.

Thus, these new efforts to curtail production to a still lower allowable and in the fact of rising output comes at a time when development generally already is at the lowest ebb it has been in many years. In many fields and on most wildcat prospects drilling has been suspended, and at others only a minimum number of rigs are running consistent with necessitated tests and routine workovers. Some scattered wildcatting is being done but chiefly in areas where development is controlled. In most of these cases operators are taking advantage of the present slack times to do their prospecting and prove their prospects and are not actuated by a desire to bring on a lot of new production.

Barbers Hill

Barbers Hill seems to be the chief target in mention of reduction of production. During the week ended April 25, this field reached a new peak with a daily average of 30,014 bbls. This, however, was only slightly above the high mark attained in the early part of 1930 during the active development of deep sands flanking the dome on the east, southeast and south and following the opening of the northwest flank deep sands. Between that time and now production of Barbers Hill has experienced a sharp decline to as low as 17,000 bbls. daily, and the present rise is due to the rapid proving up of deep sands flanking the dome on the west. With the exception of a few scattered tests around the dome, virtually all the development at Barbers Hill is confined to the latter sector.

This active development on the west side has been occasioned by a bitter line fight and all drilling has been limited to strictly outside, offset or other obligated tests, but in this upwards of 15 rigs have been running constantly. Out of this, although drilling has been restricted for the most part to necessary tests, a succession of good wells has resulted, and new producers are being brought in steadily, causing daily production to mount. In addition a large number of other tests, all of which are in line of production, are on or nearing the pay horizon and from this it is likely there will be further substantial increase in output unless some production restraint is observed.

However, it is more than probable that with the completion of the present series of tests there will be a gradual decline in the number of new operations started in that sector as line fights within present producing limits have been taken care of fairly well. With a decrease in the run of completions, a production decline would be expected as maintenance coastal output is contingent largely on the addition of new wells.

The chief complaint against Barbers Hill, however, is the fact that the majority of the new wells on the west flank are being flowed on chokes larger than possibly necessary consistent for economical production. The chokes in that area have been mainly half inch and five-eighths inch, whereas in most other fields quarter-inch chokes and less prevail.

Refugio

At present there is only one other large producing field on the Coast, that being Refugio in the lower coastal district, which has been making around 32,000 bbls. daily. However, the majority of wells there are comparatively small individually and all deep producers already are restricted, flow limited by agreement of operators to quarter-inch chokes. This restriction was put in effect early in March as a means of lowering the high gas-oil ratio of the field and to conserve as much gas as possible.

All other fields are producing under 12,000 bbls. daily, and with the exception of four of these, all are lower than half that amount. Several have materially larger potential production based just on present wells, but they are controlled either by one company or groups of companies jointly. Even Spindletop, the queen of all coastal fields, now is making less than 10,000 bbls. daily, or half of what it was producing less than a year ago.

Field Developments

There were very few field developments on the coast the past week. At Barbers Hill, Humphreys Corp. brought in two more good wells and over the week end had two others ready to bring in. This company's No. 1 E. H. Winfree, on the west flank of the dome, set six joints of screen in the sand at a total depth of 5,683 feet and came in flowing 1,879 bbls. of pipe line oil in the first day on a half-inch choke. This well is an offset to the same company's No. 1 Lula Barber, recently completed, as well as to The Texas Company's No. 1 Winfree, these being on the extreme south end of the west flank pool.

Humphreys Corp.'s No. 2 J. F. Wilburn, east side of the dome, set 233 feet of screen at 5,234 feet and came in flowing at the rate of 62 bbls. of fluid, 20 per cent water, hourly, on a five-eighths-inch choke. This well, located on the inside of the circle of production and up on the dome, drilled through the salt overhang from 1,715 feet to around 2,250 feet. Yount Lee Oil Co. completed two small wells on the south flank, these being No. 15 Chambers County, pumping 140 bbls. of fluid, 30 per cent water, 4,709 feet, and No. 19 Chambers County, flowing 600 bbls., 15 per cent water, 3,794 feet. Of particular interest in the latter is the fact that it found the pay horizon unusually high, the sand underlying the salt overhang from 1,765 feet to 3,687 feet. This well also evidently marks the inside limit of subsalt sand on the south flank. It originally was drilled to 5,691 feet in salt, probably the main salt plug, but on sidetracking that hole around 650 feet it missed the main salt mass and drilled through the overhang, at a point probably where the overhang begins. On the east flank, The Texas Company's No. 4 Wilburn drilled into cap rock cavity and was abandoned.

Leesville Area

At Leesville, LaFourche Parish, Louisiana, The Texas Company has proved a second producing horizon in its No. 2 Louisiana Land & Exploration Co., which has been completed flowing 62 bbls. hourly on a half-inch choke with 390 pounds pressure from sand at 3,598-3,628 feet with 20¾ feet of 3-inch screen in the hole. Gravity of the oil is 24.9° at a temperature of 60°. This well was completed last February from sand at 3,028-46 feet flowing at the rate of 350 bbls. daily. Failing to hold up, it was deepened to its present horizon.

This well is the discovery well of the Leesville geophysical test, on which The Texas Company has drilled one other test, No. 1 L.L.&E., which was abandoned at a total depth of 5,448 feet. Location of No. 2 is 4,396 feet south and 705 feet east of the NW cor. Section 26-21s-22e, which is 2,163 feet east and 3,610 feet south of No. 1. Neither test has found cap rock or salt.

Daily Average Production

Daily average production of coastal fields for the week ended May 2 was:

GULF COAST PRODUCTION

Texas Coast	
Allen	16
Barbers Hill	29,488
Batson	978
Big Creek	3,185
Blue Ridge	1,276
Brenham	40
Boling	713
Clay Creek	2,309
Damon Mound	1,107
DeWalt	11,626
Esperson	2,210
Fannett	479
Goose Creek	4,206
Hankamer	2,484
High Island	460
Hull	6,243
Humble	9,983
Lost Lake	293
Markham	170
Moss Bluff	432
Mykawa	160
Nash	197
North Dayton	477
Orange	1,904
Orchard	1,516
Pierce Junction	3,321
Port Neches	1,387
Raccoon Bend	8,525
Refugio	32,783
Rockland	3
Saratoga	1,046
Sour Lake	2,053
South Liberty	2,115
Spindletop	9,908
West Columbia	4,113
Total Texas Coast	152,210
Week ended April 25	159,039
Decrease	6,829
Louisiana Coast	
Anse La Butte	69
Bayou Blue	65
Bayou Bouillon	152
Black Bayou	1,558
Edgerly	401
Jennings	777
Hackberry	2,669
Lake Barre	2,364
Lake Pelto	107
Leesville	425
Lockport	7,068
Port Barre	1,904
Sorrento	663
Starks	776
Sulphur	1,709
Sweet Lake	795
Vinton	6,340
White Castle	1,241
Total Louisiana Coast	29,083
Week ended April 25	27,332
Increase	1,751
Total Gulf Coast	181,293
Week ended April 25	186,371
Decrease	5,078

Blue Ridge

Doney & Means made a slight extension eastward on the north flank of the Blue Ridge Dome in their No. 1 Blakely, 430 feet west and 75 feet north of the SE cor. Lot 8, Block 4, E. Drew Survey.

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GULF COAST FIELDS AND WILDCATS

Week Ended May 2
All Rotary

BARBERS HILL—CHAMBERS COUNTY

Gulf Production Co.'s No. 1 Wilburn (D.D.), Henry Griffith League, 50 ft. S of C of N line of tract	Set 24 ft. 3-in. screen 5,290 ft.; swabbed salt water showing oil.
Humphreys Corp.'s No. 2 Wilburn, southeast	Set 233 ft. screen 5,234 ft.; comp. flowing 62 bbls. fluid, 20% water, hourly, 180 lbs. pressure, on ⅝-in. choke.
Humphreys Corp.'s No. 1 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from S line and 75 ft. from W line of tract	Set 6 jts. screen 5,683 ft.; comp. flowing 1,879 bbls. pipe line oil, 600 lbs. pressure, on ½-in. choke.
Humphreys Corp.'s No. 2 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from W line and 478 ft. S line 10-acre tract	Sandy shale showing oil 5,796 ft.; drlg. plug.
Humphreys Corp.'s No. 3 E. H. Winfree, west flank, W. D. Smith Sur., 264 ft. from S line and 50 ft. from W line of 10-acre tract	Set screen 5,705 ft.
Humphreys Corp.'s No. 4 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from W line and 617 ft. from S line 10-acre tract	Sand and shale showing oil 5,344 ft.; cmtd. csg.
Humphreys Corp.'s No. 5 E. H. Winfree, W. D. Smith Sur., 854 ft. from S line and 50 ft. from W line	Drlg. sand and boulders 2,755 ft.
Humphreys Corp.'s No. 6 E. H. Winfree, W. D. Smith Sur., 50 ft. from N line and 50 ft. from W line of tract	Derrick.
Humphreys Corp.'s No. 1 Anna Davis, Henry Griffith League, 475 ft. from N line and 71 ft. from E line of Strip 6	Drlg. sand rock 1,058 ft.
Humphreys Corp.'s No. 2 T. S. Fitzgerald, Henry Griffith League, 300 ft. from N line, 65 ft. from E line of tract	Rig.
Mills Bennett Production Co.'s No. 1 Gulf-Fisher (worked over), Wm. Bloodgood Sur., 50 ft. from SW line and 250 ft. from SE line tract	Drlg. shale 5,177 ft.
Mills Bennett Production Co.'s No. 4 Gulf-Fisher, Wm. Bloodgood Sur., 300 ft. from W line, 80 ft. from N line tract	Spudded.

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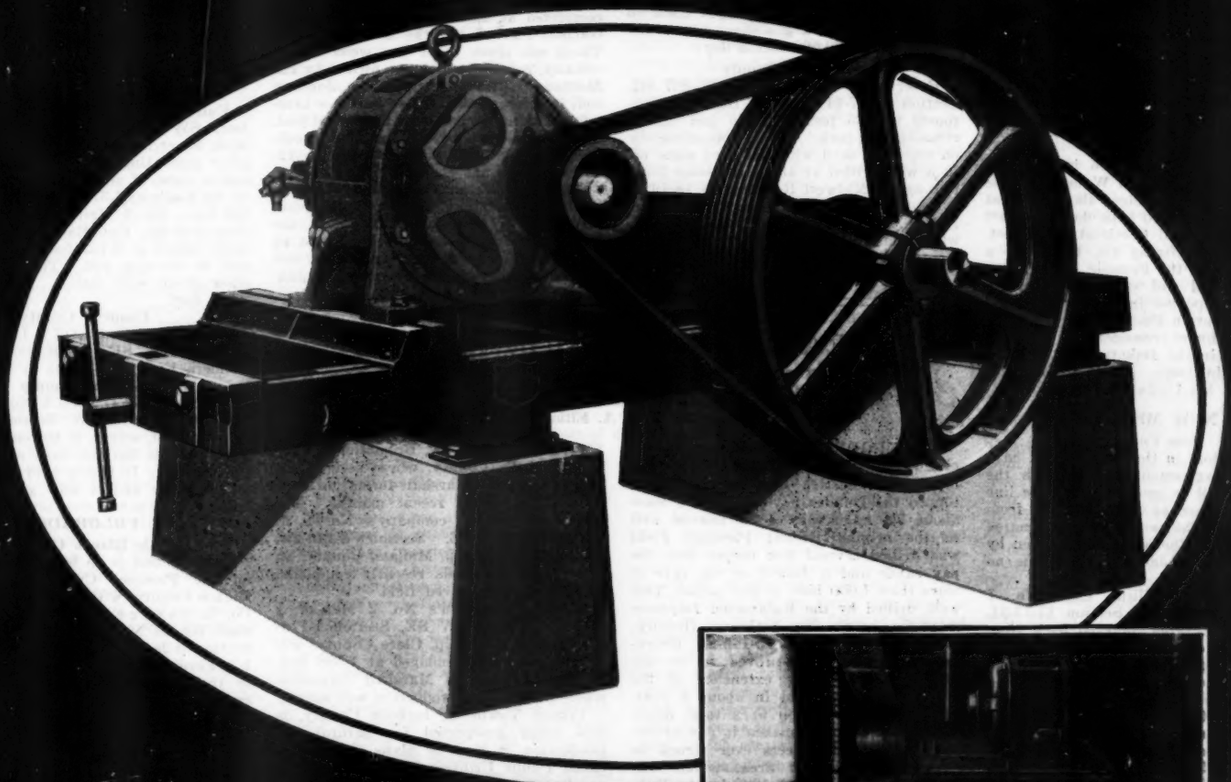
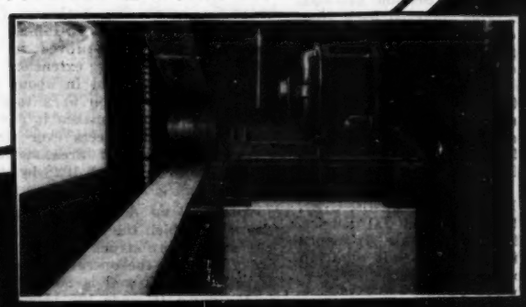
IDEAL

"Reg. U. S. Pat. Off."

V-BELT COUNTERSHAFT

TYPE "E"





Descriptive Bulletin No.-26 Sent on Request

THE NATIONAL SUPPLY COMPANIES

Proration Agreement in Eunice Pool

Unitization Plan Worked Out on Piceance Creek Structure in Colorado. Harding County, New Mexico, Strikes Second Gas Flow

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., May 4.—Operators in the Eunice Pool in Lea County reached an agreement for the proration of production, the allowable outlet being put at 480 bbls. daily from eight wells. The Western Drilling Co.'s No. 1 Bridges, in the Caprock area, is swabbing 25 bbls. daily after plugging back and shooting. A Harding County wildcat encountered a second flow of gas at 825 feet. One completion, an 11,000,000-foot gas well, and one new operation were reported in the Kevin-Sunburst Field in Montana.

Owners of leases, permits and royalties on the Piceance Creek structure in Colorado have worked out practically a 100 per cent unitization plan and location has been made for another test with the Magnolia Petroleum Co. in charge. The Mountain Fuel Supply Co. appears to be on the eve of bringing in a big gasser on the Hiawatha Dome.

The Prairie Oil & Gas Co. is preparing to drill three wildcats in Wyoming. The Resolute Oil Co.'s Badger Basin wildcat is flowing 125 to 150 bbls. daily, 10 feet in the second Wall Creek at 8,505 feet. The Midwest Refining Co. has made a new location on the Frannie Dome. One well abandoned and several new operations were reported in the Osage Field and the Mountain Fuel Supply Co.'s No. 1 Cappers found considerable gas and some water in the Dakota on the North Baxter Basin Dome. E. L. Doheny is resuming in his Uinta County wildcat.

NEW MEXICO

Lea County

The operators in the Eunice Pool have heached an agreement under which the production will be prorated, the pipe line outlet being fixed at 480 bbls. daily from eight wells. The potential is estimated at 3,500 bbls. The oil is being taken by the Texas Pipe Line Co. There is no drilling at present.

The Western Drilling Co.'s No. 1 Bridges, SE cor. NW, Section 17-17-34, in the Caprock area, plugged back from a total depth of 5,083 feet and shot with 200 quarts at 4,680-4,750 feet, is being tested after cleaning out. It is swabbing around 25 bbls. Culberson & Conrad's No. 1 State, C NE, Section 22-18-34, is rigging up rotary for a 5,000-foot test.

The Midwest Refining Co.'s No. 26 Capps, C SE SW, Section 3-19-38, Hobbs Pool, is drilling at 1,670 feet in anhydrite.

Leonard & Levers' No. 1 Justis, C SE NE, Section 19-25-37, in the Jal district, is drilling at 1,390 feet in salt. It topped anhydrite at 995 feet and salt at 1,175 feet. Elevation is 3,072 feet.

Eddy County

J. O. Hammond's No. 1 Gillette, C NW NW, Section 34-18-26, southwest of Artesia, is shut down at 903 feet in lime and sand, and the Oil Well Drilling Co.'s No. 1 Baker, SE NE NE, Section 21-21-26, Carlsbad district, is shut down for casing at 885 feet.

Chaves County

Warman Oil Trust's No. 1 Seibert, NE, Section 27-13-24, Blackdom district, is shut down in lime at 2,650 feet waiting for fuel, and R. T. Neal and others' No. 1 Russell, SW NW NW, Section 21-14-25, Hagerman district, is drilling at 2,254 feet in lime and shale.

Santa Fe County

Meyers-Owsley Drilling Co.'s No. 1 Cantwell, NW cor., Section 5-10n-9e, the only operation in the county, is spudding at 65 feet. It will be drilled to a minimum depth of 2,500 feet with cable tools.

Harding County

Kummbaca Oil & Gas Co.'s No. 1 Kerline, NW cor. SE, Section 34-21n 30, Bueyeros district near Ute Creek Buttes, which had an estimated flow of 500,000 to 1,000,000 feet of noninflammable gas at 285-87 feet last month, encountered a larger flow at 825 feet. Reports differ as to the quality of the gas, one saying it is noninflammable and a later one that it will burn. Samples are being sent to the New Mexico School of Mines and the Government's helium plant at Amarillo for analysis. The upper gas did not contain helium.

Torrance County

J. B. Witt Oil & Gas Co.'s No. 1 Kutchin, also known as the Sinco Oil Co.'s No. 2 DeHart, NE SE SW, Section 12-7n-7e, McIntosh district, is bottomed at 1,440 feet and was plugged back to 1,230 feet to test a gas show which was estimated at 100,000 feet a day.

San Juan County

Reserve Oil Co.'s No. 3, NW SE SE, Section 36-27-14w, Stony Butte, is bottomed at 735 feet in shale and underreaming 6⅝-inch. It is approximately on top of a sand which showed some oil in a well drilled at about the same location by the Midwest Refining Co. in 1928.

Continental Oil Co.'s No. 24, SW cor. NW, Section 1-29-19, Rattlesnake Dome, which has been at 4,730 feet for two months when the drill pipe stuck, is waiting on cement to set. It is drilling by.

R. C. Oswell's No. 2, NW, Section 34-30-11, between Aztec and Bloomfield, is spudding for a shallow test, and Rio Grande Development Co.'s No. 2 Lanier, SE cor. NW, Section 9-29-11, Bloomfield district, is drilling at 1,515 feet with 6⅝-inch at 1,490 feet. Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor., Section 20-28-10, Kutz Canon district, is drilling at 2,610 feet in Lewis shale.

UTAH

The Utah Southern Oil Co.'s No. 1 Balsey, C NE NE, Section 31-23-21, Salt Valley Dome in Grand County, is drilling at 2,260 feet in salt.

MONTANA

Toole County

One completion and one new operation were reported in the Kevin-Sunburst Field. J. W. Johnson and others' No. 1 Lutz, C NW NW, Section 34-33-2w, was completed at 1,525 feet and gauged 11,000,000 feet of gas the first 24 hours. There are seven other gas wells in the vicinity, most of which are owned by the Montana Cities Gas Co. The Johnson well is the best, the largest producer heretofore having gauged over 10,000,000 feet. The new operation is Marimont and others' No. 1 Dunham, NW cor., Section 12-33-1w, which has rig up.

Teton County

The California Co.'s No. 1 Sullivan, NW NE NW, Section 34-27-7w, in the Bynum-Pendroy district, 8 miles west of tests drilled several years ago which had good shows of oil, has commenced spudding. It is on the western side of the Sweetgrass Arch, west of the Pondera Field.

Liberty County

Northland Oil & Gas Co.'s No. 1 Yurman, C SE SW, Section 32-33n-5e, Liberty Dome, is drilling at 3,535 feet with the Devonian as the next objective. The show of oil at 3,471 feet was soon exhausted when tested. G. G. Howard's No. 1 Schooniver, SW SW, Section 18-36-6e, Bear's Den structure, which had trouble getting through quicksand at 100 feet, skidded the rig and is drilling at 600 feet in the second hole.

Carbon County

Ohio Oil Co.'s No. 1 Montana Industrial, SE SW NE, Section 11-7s-21, Dry Creek Dome, an offset on the north to the discovery well in the Dakota, is drilling at 4,925 feet, within a few hundred feet of the objective. Same company's No. 1 Souders, C SW SW, Section 2-7s-21, is drilling at 1,721 feet. Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW, Section 7-7-22e (corrected), is drilign at 1,220 feet.

Glacier County

Fulton Petroleum Co.'s No. 1 Blackfeet, SW NE NE, Section 28-36-12w, Milk River area, is drilling at 1,450 feet after cementing 16-inch on bottom. It had a show of oil and gas near the base of the Eagle at 1,370-1,400 feet. B. & H. Oil Co.'s No. 1 Haines, C SE SE, Section 2-34-6w, Cut Bank area, shot the sand topped at 2,762 feet with 10 quarts and is cleaning out. This sand had a show of oil with water. Total depth is 2,781 feet.

Pondera County

American Oriental Oil & Gas Co.'s No. 3 State, NW SE SE, Section 16-27-4w, Pondera Field, is drilling at 600 feet.

Rosebud County

Prairie Oil & Gas Co.'s No. 1-X, Contract 3, NE SW NW, Section 26-10-39, Porcupine structure, is bottomed at 2,415 feet where it lost the tools while drilling out cement. It had a hold on the tools which broke and is now getting a new hold.

COLORADO

Rio Blanco County

Another test is to be drilled this year on the Piceance Creek Dome in Rio Blanco County, with Magnolia Petroleum Co. in charge. A location has been made for its No. 1 Maddock, C NW SE, Section 9-2s-96, half a mile east of No. 1-A Fordham, which was started in 1929 by the White Eagle Oil & Refining Co. and subsequently completed by the Magnolia company after it had acquired control of the White Eagle. The operation is of more than ordinary interest not only on account of the oil and gas possibilities, but due to the unitization of the holdings on the structure into what is one of the most complete so far organized. Not only have the owners of leases and permits joined in the unitization plan, but the royalty owners also are participating and the structure is almost 100 per cent unitized. Among the companies and interests participating in addition to the Magnolia company are the Midwest Refining Co., Snowden & McSweeny and E. P. Earl. The block embraces approximately 61,400 acres. A. C. Lightall of Denver, originally assembled the block and is a large owner of leases and royalties. He was largely instrumental in bringing about the test of the structure which is entirely in the Green River formation of Tertiary age. No. 1-A Fordham, the only deep test drilled, went to a total depth of 5,130 feet, but was not a complete test of all formations within reach of the drill when it was plugged back to 2,985 feet and completed as a gas well, gauging 1,876,000 feet with a pressure of 715 pounds.

Rio Blanco County may be the scene

MT. PLEASANT EXTENSION WELL IS FIELD'S MOST IMPORTANT IN YEAR

By Paul A. Elliott

MUSKEGON, Mich., May 4.—The semiwildcat well which flowed over the top of the derrick last week when it topped the Dundee pay sands on a lease about 1½ miles east of the nearest well in the original Mount Pleasant Field was drilled several feet deeper into the pay sands and it flowed at the rate of more than 1,000 bbls. a day initial. This well, drilled by the Kalamazoo Improvement Co. as the No. 1 George Hornick, SW NW SW, Section 15-14n-2w, Greendale Township, has proved to be the most important new extension of the Mount Pleasant Field in about a year. Its present production at a total depth of about 3,650 feet makes it one of the largest initial producers ever struck in the Mount Pleasant area, which was opened in the spring of 1928 by the Pure Oil Co.

Although no definite information on depths at which the Dundee limestone or pay sands were struck has been released by officials of the operating company, it is said that the well is now only 6 feet in the pay. It made 125 bbls. at 1 foot in the pay last week.

The Gordon Oil Co. has moved a rig to a lease directly west of the new well and it is expected to start drilling this week. It is probable that other offset wells will be started in the near future and that a general drilling campaign between the well and nearest production in the original proved field will result as practically all of the acreage in the vicinity has been under lease for several years.

Pure Oil Co. to Drill Two Wells

Two permits for new wells in the Mount Pleasant area have been obtained from the state conservation department by the Pure Oil Co. One will be the company's No. 3 Stanley E. Willie, SE SW, Section 4-14n-6w, Broomfield Township, Isabella County, where several dry gas wells in the Marshall formation have been completed in recent months. The other will be the company's No. 1 A. Bernard, SE SE, Section 8-14n-2w, Greendale Township, Midland County, an offset to other wells recently completed in the original proved field.

Henry M. Brown's No. 2 McKay & Mercier well, C SW SE, Section 1-17n-5w, Surrey Township, Clare County, will be plugged and abandoned at 1,508 feet. It was dry in the Marshall formation where natural gas production was sought.

Vernon Township, Isabella County, is now being prospected for natural gas production in view of plans of the National Public Utilities Corp. for laying a gas line from other gassers in this territory to Mount Pleasant.

Negotiations for a franchise have not yet been completed by the Philadelphia concern with the Mount Pleasant city council but indications are that gas consumers of the city will be using natural gas before the middle of the summer.

Final action by the city council is expected at a special meeting after which the franchise must go to the people for final approval at a special election.

Salt Water Encountered

Salt water is reported to have been struck in the lower Traverse formation in H. C. Nelson's No. 1 Arvid Nelson well, SE NW, Section 24-12n-18w, White River Township, west of Montague village, shattering operators' hopes of opening a new Muskegon oil pool in that vicinity.

A slight show of gas is reported to have been struck this week in the Newaygo Gas & Oil Co.'s No. 1 A. J. Bates well, NE SE, Section 12-13n-13w, Sher-

(Continued on Page 128)

of considerable wildcatting this year. The California Co.'s No. 1 California-Raden, NW SE, Section 30-2n-102, a deep rotary test on the Rangely Dome, expects to begin spudding early in May with the Pennsylvanian formation as the objective. The Ohio Oil Co. blocked up the Meeker Dome last year and is under contract to begin drilling a Pennsylvanian test by June 1. Several companies have obtained holdings on the Beaver Dome, but no drilling program has yet been announced.

Moffat County

Mountain Fuel Supply Co.'s No. 2 State, SE NE, Tract 37-12n-100, Hiawatha Dome, appears to be on the eve of coming in as a big gasser. The 10¾-inch casing has been set at 2,268 feet on top of a sand in the Tertiary and will be drilled in as soon as the cement sets. It has already developed a flow of 15,000,000 feet at present depth.

Larimer County

C. Leonard Smith's No. 1 State, SE cor., Section 36-12n-70, Sand Creek, shows no material change. It is bottomed at 720 feet and has had some good shows of oil and gas, but a test has been hindered by water from an upper horizon at 135 feet breaking through. Standard Oil Co. of Colorado's No. 1 Wilson, NW cor. SW, Section 21-4n-69, Berthoud Dome, is bottomed at 1,250 feet and waiting for 10-inch pipe. It had only a light show of oil in the horizon which yielded a 1,000,000-foot gas well in No. 1 Hall at 700 feet a half mile to the northwest.

Weld County

Reiter-Foster Oil Co.'s No. 1 Ida Johnson, C NE NW, Section 24-6n-61, two locations north of the discovery well, is running foundation for 123-foot derrick, laying a 6-mile 4-inch water line from Jackson Lake, and setting three steam boilers. Manning & Terry, Inc., who have the drilling contract will furnish the combination rotary and cable-tool rig. The plans provide for 150 feet of 15½-inch, 4,400 feet of 9-inch and 7-inch to the top of the pay.

Morgan County

Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan district, was reported on April 25 bottomed at 4,090 feet and cleaning out. No new hole has been made for some time.

Lincoln County

Eastern Colorado Oil Co.'s No. 1 State, SE NW, Section 36-14-57, is underreaming to lower 4¾-inch from 2,450 to 3,380 feet. It is supposed to be within 100 to 150 feet of the Muddy sand.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, near Aurora, is making new hole at 5,803 feet with a 6-inch bit after sidetracking tools. The hole is bottomed in sand showing a little gas and rainbows of oil and no water. Oil show at 5,735 feet has been cemented off.

Jefferson County

Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor., Section 24-4s-69, near Denver, is drilling at 3,901 feet in sandy shale.

Adams County

Nettie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64, Watkins district, is drilling at 3,100 feet and carrying 8⅝-inch.

Pueblo County

Anchor Oil Co.'s No. 1 Esely, SW SW, Section 35-22-67, Turtle Butte district, has set casing at 515 feet to shut off water and is resuming. It had a show of noninflammable gas in the upper Morrison at 350-70 feet.

Huerfano County

Parker Club, Inc.'s No. 1 fee, Section 4-28-68, Badito-Alamo Dome, is bottomed at 4,115 feet and cementing cave and waiting for casing.

Park County

South Park Oil & Gas Co.'s No. 1 Esche, SE cor. NW, Section 5-9s-76, Muleshoe Dome, is drilling at 1,860 feet in shale and lime and showing enough gas to burn 3 to 4 feet above the casing for a few minutes. No water has been encountered below the 10-inch at 550 feet and some rainbows are showing on the bailer. South Park Oil Co.'s No. 1 Milligan, NE SE, Section 13-8s-76, Jefferson district, is drilling in a dry hole at 1,950 feet with 8¼-inch at 1,865 feet, a water shutoff having been secured without cementing.

Montezuma County

Fred C. Haller's No. 2 Carr, C NE SW, Section 33-36-14, Point Lookout structure, is drilling at 145 feet in gray shale. The Department of the Interior's well being drilled for water at Spruce Tree camp in the Mesa Verde National Park, is reported to have a flow of 300 to 400 bbls. daily at 3,725 feet. The water in the Dakota contained sulphur and was not suitable for domestic purposes.

Montrose County

Uncompahgre Oil & Gas Co.'s No. 2, Section 27-50n-10w, near Olathe, is drilling at 800 feet with the first objective expected at 1,440 feet and Sundance at 1,940 feet.

WYOMING

Park County

Resoulte Oil Co.'s No. 1, NE SW NE, Section 17-57-101, Badger Basin Dome, Park County, 7 miles south of the Montana line and 20 miles south of Dry Creek Dome in Carbon County, Montana, where Ohio Oil Co. opened a new pool in the Dakota last year, is flowing by heads at 12-hour intervals and making from 125 to 150 bbls. daily from the second Wall Creek sand in the Frontier formation at a total depth of 8,505 feet. It was drilled 10 feet into the sand when operations were suspended to erect more tankage, there being only 2,000 bbls. of storage on the lease. This well, the deepest in the Rocky Mountain area and among the deepest in the country drilled with cable tools, opens a new pool. The structure has a closure of at least 700 feet and 7,000 to 8,000 acres within the known closure, all controlled by the Resolute company and consists mostly of Government and Northern Pacific Railroad land. Julius Peters, of Great Falls, Mont., is president. First indications of opening a new pool occurred last fall when the bit entered the first Wall Creek at 8,245 feet from which it produced 1,000,000 feet of gas and a small quantity of very light 45 gravity oil from 14 feet of sand. Since passing out of that horizon it has been drilling in a 3½-inch hole. The second sand in which it is bottomed is estimated to be about 40 feet thick and the interval between that formation and the sand in the Dakota in which the Dry Creek well found production is 700 to 800 feet. Most of the structures in the Big Horn Basin lie close around the edges of the basin, but the Badger Basin structure is near the center of the depression. The company plans to drill with rotary equipment.

Midwest Refining Co. has made a location for its No. 24 Rosenberg, on the Frannie Dome, in Park County, in the NE SE NE, Section 26-58-98, 330 feet from the east line at 1,100 feet from the south line of the NE. It is half a mile west and a little north of No. 36 Rosenberg, the discovery well in the Madison lime, and a half mile south of No. 36 Kirk-Peters, a producer in the Tensleep. It is the farthest west of the wells drilled and close to a major fault which cuts across the dome in a northeast-southwest direction. Midwest drilled close to this fault in its No. 31 Rosenberg, SW cor. SE, Section 24-58-98, and apparently hit the fault as it was still in the red beds when shut down at 4,230 feet several months ago.

Big Horn County

Ohio Oil Co.'s No. 1 Smith, Lot 61, Section 33-56-97, Garland Dome, is bottomed at 1,274 feet and redrilling at 1,225 feet. Utah Southern Oil Co.'s No. 3 Government, NE cor. SW, Section 29-56-97, is killing gas in the Embar-Tensleep at 3,318-3,760 feet and has rotary rig completed to deepen 500 feet into the Madison lime to the oil horizon found in the Ohio Oil Co.'s No. 1 Eaton. F. T. Griffith, trustee's No. 1, SE NE SE, Section 29-56-97, which heretofore has been known as C. S. Fertig's operation, is rigging up to resume at 900 feet. Contract calls for a 4,500-foot hole, if necessary. Paul Stock has the contract.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW, Section 19-45-92, Neiber Dome, expected to go to around 7,000 feet to test the Frontier, has resumed after cementing 15½-inch at 782 feet and shutting down to drill more water wells, and is making hole with rotary at 2,400 feet.

Natrona County

Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-35-79, Midway Dome, is drilling at 6,210 feet in hard white sand in the Morrison and is on its way to the Sundance. Cuyler Oil Co.'s No. 1 Heery, SE, Section 23-36-85, Powder River, recemented 10-inch at 1,250 feet, between the first and second Wall Creek.

Converse County

Ohio Oil Co.'s No. 5 Jones, NW NE NE, Section 9-33-76, Big Muddy, which averaged 350 bbls. daily, after tubing, from the Lakota sand at a total depth of 4,364 feet, was beaned down to 100 bbls. per day with a back pressure of 400 pounds. The oil, which at first tested 32 degrees gravity, subsequently increased several degrees. After a conference between Carl M. Cox, state land commissioner, John G. Marzel, state geologist, John McFadyen, western manager of the Ohio company, and R. S. Shannon, of the Continental Oil Co., the latter owning a half interest in the lease, the well was beaned down to 15 bbls. per day. Continental's No. 50 Whiteside, NW SW SW, Section 9-33-76, which shut down recently at 3,345 feet to await completion of Ohio's test, is moving away standard rig. It was expected a rotary would be installed to continue to the Lakota, but it has not been announced whether this plan will be carried out following the partial shutting in of Ohio's well.

Niobrara County

Indian Petroleum Co.'s No. 1, NW NE, Section 7-35-65, Lance Creek, being deepened to the Sundance, is drilling at 3,827 feet in shale. The objective is expected at 4,200 feet. So far only one well, the discovery in the Sundance drilled last fall by Ohio Oil Co., has been put down to that horizon. Phillips Petroleum Co.'s No. 1, SW SE, Section 32-34-65, Middle Creek structure, which will test Sundance at around 850 feet with a core drill, is making hole at 300 feet.

Weston County

Decker Oil Co.'s No. 1, NW NE NE, Section 1-45-64, in the Osage district, is pulling casing to abandon at a total depth of 2,124 feet. It had a show of oil with water in the Muddy. Chadron-Osage Oil Co.'s No. 4, C SE SW, Section 13-46-64, which was drilled in October, 1928, and made 60 bbls. natural, was shot the past week and came back flowing 150 bbls. The same company's No. 2, on the same lease, is still flowing after having been on production 34 months. Clark and others' No. 1, SE NE NE, Section 15-46-64, is shut down at 1,524 feet, and Hugh Updike's No. 1, SE SW NW, Section 23-46-64, is drilling at 500 feet. Tom Don's No. 2, NW cor. SE, Section 23-46-64, has rig completed, and Chadron-Osage Co.'s No. 2, NW SE, Section 31-46-63, is rigging up. The Chadron-Osage Co.'s No. 12, NE SE, Section 14-46-64, is waiting after cementing 8¼-inch at 1,224 feet. Leithart and others' No. 5, NE NW SE, Section 13-46-64, is rigging up, and Carl Cundy's No. 2, NE cor., Section 31-46-64, is a location.

Laramie County

Prairie Oil & Gas Co. is reported to have blocked up 25,000 cares in Laramie County, 15 miles west of Cheyenne, between Otto and Borie, upon which it is planning to begin a test within 60 days. This is new territory, just north of the Colorado line. Considerable geophysical work has been done. This company also is preparing to drill a wildcat north of Lost Soldier in Carbon County and another on the Gooseberry structure in Townships 46 and 47, Range 100w, in Park and Hot Springs Counties. The Pierre is the surface formation. A well was drilled several years ago in the NW SW SE, Section 29-47-100, by the Washakie Oil Co., which found water in the Frontier at 2,080-2,120 feet, and black oil in a sand at 2,425-2,500 feet.

Carbon County

Producers & Refiners Corp.'s No. 1, Section 7-26-86, South Ferris, is drilling

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FOUR OPERATORS IN TIOGA FIELD SELL OUT TO LYCOMING GAS CO.

By Special Correspondent

CORNING, N. Y., May 2.—The Lycoming Natural Gas Co., a subsidiary of the Peoples Natural Gas Co. (Standard of New Jersey) has attained a commanding position in the New York-Pennsylvania natural gas region of which Corning is a center through the acquisition of the holdings of several large gas operators. J. French Robinson, an official of the Lycoming company announces that negotiations have been completed by the Lycoming Natural Gas Corp. to take over the operation of the properties of the Benedum Trees Oil Co., J. C. Trees, Paul G. Benedum and the Penn Ohio Gas Co. These properties include approximately 250,000 acres in New York State and Pennsylvania and included two producing gas wells and all wells now being drilled by the above mentioned companies.

With this newly acquired acreage the Lycoming Natural Gas Co. now has under lease in both states approximately 1,000,000 acres. The operation of these properties under one operating management is in line with the present trend of economic management of gas fields and the marketing of gas, Mr. French said.

While the statement gives out no information as to the marketing plans, it is evident that the Lycoming, in view of the merger, will be in a position to develop its own marketing system, entirely independent of existing companies, which may or may not affect new sources of demand, especially throughout this section, in central New York, east to New York City and also throughout New England. It is already taking rights of way for a pipe line to run northeast within 1½ miles of Corning and 4½ miles of Elmira.

The Lycoming Natural Gas Co. comes into possession of 11 drilling wells and altogether now owns 17 drilling wells in two states, and two producing wells, Benedum & Trees' No. 1 Farr in Tioga County, Pennsylvania, drilled in February 16 and reported to have had an initial production of 15,000,000 feet and same operators' No. 1-B Farr in the same county, which came in in February with an initial production of 28,000,000 feet.

The Cities Service Corp. has made a location on the Hettick farm in Towanda Township, Bradford County, Pennsylvania, as a result of which there was a sharp contest for leases that had been overlooked inside a 2-mile radius centered by the projected test. It is said that prices as high as $10 per acre were paid in the scramble for "protection."

Over west in Chautauqua County, New York, where the first commercial gas in the United States was obtained a century ago, Cities Service Corp., Columbia Gas & Electric Co., Penn United Gas Co., Brooks J. Johnston and Daniel S. Webber & Son and others have acquired blocks of leases, and a Silver Creek, N. Y., company has made a location for a test. Northern and western New York from Lake Ontario south and from Lake Erie east has been known gas territory for many years. Chautauqua, Erie, Cattaraugus, Ontario and Orleans Counties have been the leading gas producers, but other western and northern New York counties have shown productive spots. A well in the old Zoar Field in southern Erie County was reported as good for more than 30,000,000 feet per day. This well was reported as producing from the Onondaga limestone which lies above the Oriskany sand the pay in the Corning gas region. Many of the gas wells in northern New York produced from the Medina sandstone, which lies at great

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New Sand Proven in Muckelroy Pool

Nordan & Morris Test Estimated Good for 200 Bbls. in Zone 100 Feet Deeper Than Any Others Producing in That Area

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., May 4.—A new sand was proven in the Escobas or Muckelroy Pool in Zapata County at 1,485-91 feet in Nordan & Morris' No. 1 Jose Bustamente estimated good for 200 bbls. of oil; and Carpenter's No. 1 Juan Benavides, a wildcat east of the Cole Field in Duval County with a saturated sand at around 1,700 feet looked as though it might develop something interesting. These and the completions of the Aransas Oil Co.'s No. 1 Welder, 15 miles from any production in San Patricio County and about half way between the Refugio Field on the north and the White Point Field on the south for 50,000,000 feet of gas, constituted the leading issues of the week.

Probability of the Aransas Oil Co.'s No. 1 Welder making a producer and opening a new pool was reported a few weeks ago. It was first reported having the showing at 3,653-63 feet. It was drilled to 3,698 feet but ran into salt water and was plugged back. Casing was set at 3,634 feet and the well came in with an estimated 50,000,000 feet of dry gas. It is a pure wildcat, about half way between the Refugio Field on the north and the White Point Field on the south.

The well was drilled on the "Poor Boy" plan. Drillers and tool dressers from the Refugio Field put in their labor and Refugio business men put up the necessary cash, this being the third time Refugio business men have financed such deals and each time it has resulted in a producer being brought in.

Laredo District

In the Laredo district Nordan & Morris' No. 1 Bustamente at 1,491 feet, estimated for 200 bbls. of oil, is in a sand about 100 feet deeper than any other now producing in the Escobas or Muckelroy Pool and this is the third producing sand in the field. The discovery well at the north end came in a small well at 1,300 feet. Production was developed around it at that depth. Wicker went 3 miles south and got the same sand. Later around the Wicker well a sand at 1,400 feet was found productive The Nordan & Morris test is about half way between the two ends of the field and in an area where there is no production developed except this well. The location is 750 feet from the northeast and 200 feet from the northwest lines of Share 35 of Fansler's partition of the Comitas grant.

E. C. Brogan's No. 1 Montemayor in the northwest corner of Block 11, Survey 64, and about 2,000 feet east of the line of production in sand at 1,494-1,500 feet with a showing of oil was running a sand tester late in the week. It may be that he has picked up the same sand. His test is approximately 1½ miles north and a little east of the Nordan & Morris test.

S. J. Carpenter's No. 1 Juan Benavides, about a mile east of production in the O'Hern-Seacord and Cole Pool of Duval County, had a saturated core late last week that was interesting. It was seemingly running quite high. Information on the depth was not definite but it was said to be about 1,700 feet. Production in the Cole Field is at about 1,750 feet for the first sand. The well is approximately 1½ miles east and a half mile north of the discovery O'Hern-Seacord Pool and quite wildcat. It is 300 feet from the northwest line and 150 feet from the southwest line of Block 38 of Subdivision No. 1 of the Mesquite grant. It was arranging to make a test.

Carolina-Texas Pool

Carolina-Texas Oil & Gas Co.'s No. 9 Barnsley, in Block 13, Survey 268, Webb County in the Carolina-Texas Pool, tested for a big gas well in sand at 2,567-75 feet and has set casing and is waiting on cement. There is one well a mile northwest of it producing at 2,520 feet and it is now the conviction that this is a different sand entirely from any other producing in the field. The well is estimated on the showing to be good for 50,000,000 feet of gas. The company will drill the No. 10 about a half mile south of the No. 9 as the next location.

SOUTHWEST TEXAS PRODUCTION

Agua Dulce	45
Bexar County	331
Branyon	22
Bruner	12,230
Buchanan	102
Chapman	4,009
Dale	292
Darst Creek	21,245
Goliad County	31
Kingsville	116
Larremore	22
Luling	8,650
Lytton Springs	718
Manford	135
McMullen County	20
Medina County	22
Minerva	404
Mirando district*	13,210
Pettus district	7,354
Saxet	405
Somerset	1,329
Thrall	35
White Point	41
Yoast	40
Total	70,808
Week ended April 25	70,492
Increase	316

*Includes Charco-Redondo, Jennings and Mirando Valley of Zapata County; Albercas, Aviator, Carolina-Texas, Mid-O-Juelos, Schott and Wolcott, Webb County; Alworth, Henne-Winch-Fariss and Randado, Jim Hogg County; Cole, Driscoll, Kohler, Schoolfield-O'Byrne and S. R. C.-Vacuum, Duval County; Mount Lucas, Live Oak County.

Balcones Fault Zone

Guadalupe County, at times the most active county in Southwest Texas but lately with little going on there, is to have several new tests. Another test is to be drilled in the territory southeast of Seguin around where Adams & Liles made several attempts at finding an Edwards lime field. Eugene Sights has had a lot of geological work done on his block east of Seguin a few miles where three or four tests have seemingly proven a fault with a good chance at getting production on the next shot.

In the territory south of Seguin where Tidal drilled one test there are to be further efforts at wildcatting. In the western part of the county 4 miles south of Marion, Linne and others will drill in the center of the J. E. Linne 263-acre tract in the V. Cortario Survey and McGarrity is down nearly 500 feet in a test 2 miles north of Marion. San Antonio Oil & Royalty Co. is soon to start on No. 1 Dibrell in H.&T.C. Survey in the southern part of the county and Schleyer and others are down 1,300 feet in the No. 1 Ogletree a mile north of the old Luling Field. There is also shortly to be made an effort to find shallow production in the north part of the county.

West of San Antonio

In the Balcones area west of San Antonio excepting for the developing of some shallow production in Medina County that produces an exceptional grade of lubricating oil and work on the Pryor Ranch in Zavala and the Rycade-Chittim Field in Maverick County, there is almost nothing going on. A. H. Wray is still working with his No. 1 Burns estate in the northwest corner of Frio County. The well was shut down with a good show of oil in the Edwards for weeks waiting for casing. Casing has been set and the crew started to drill in. It lost some tools and is now fishing for these. Wray has had rather bad luck and long delays. The importance of the test is the possibility that it is going to make an Edwards lime producer and will be the first such west of the three fields at Luling if it does, and more than that it is 75 miles west of Luling. In the Luling area the Edwards is very porous, holes in the lime rock being so big one can stick a finger in them. Farther west the Edwards has been found to be tight and many believe it will not be

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WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location— Remarks:
Tom Draper's No. 1 A. W. Schwarz, 185 ft. E of center of W line ..... T. D. 695 ft.; drlg.
Pacific Oil & Gas Co.'s No. 1 Harris, G. Van Norman Sur. ..... T. D. 795 ft.; standing.

BLANCO COUNTY

Hardy-Sitton's No. 1 McMillian ..... T. D. 720 ft.; drlg.
Liles-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,420 ft. to E line of James Stanford's No. 155 ..... T. D. 970 ft.; fishing.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City ..... T. D. 574 ft.; shut down.
J. R. Meek's No. 1 Walker, 360 rds. from W line, 482 rds. from S line of 375-ac. tract in Sur. No. 32 ..... T. D. 1,025 ft.; resumed drlg.
C. Rosenfield's No. 1 Hohenberger, 800 ft. to W line, 1,360 ft. to N line, Sur. No. 94 ..... T. D. 712 ft.; shut down.

BASTROP COUNTY

Turner-Whorton and Anderson's No. 1 Harris, Joshua Gray Sur. ..... T. D. 2,384 ft.; abnd. dry.

BELL COUNTY

Hartman et al's No. 1 M. E. Reed, Nancy Roberts Sur. ..... T. D. 907 ft.; showing oil; shut down.
Mildon Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur. ..... T. D. 519 ft.; drlg. shale.
O. O. Alford et al's No. 2 F. Spankell, W. Woodford Sur. ..... T. D. 500 ft.; shut down.
Vilas Oil Co.'s No. 1 B. F. Whittington, 9 miles E of Holland ..... Moving in rig.
Ingersoll-Miller's No. 1 E. B. Carruth in Francisco Rolen Sur. ..... T. D. 200 ft.; drlg.

BROOKS COUNTY

Ike Howeth's No. 1 Singer, 400 ft. E of Humble's No. 1 Singer ..... Rigging up to test sand at 2,340-50 ft. that showed oil but not tested in Humble's No. 1 Singer.
The Texas Company's No. 1 Allen, San Antonita grant ..... T. D. 200 ft.; drlg.

BEE COUNTY

Alexander et al's No. 1 McFall, 3 miles south Skidmore ..... T. D. 595 ft.; drlg.
Cathell & O'Neill's No. 1 Miller, Ronald Hotchkiss Sur. ..... T. D. 4,509 ft.; cored salt water sand.
Grebin & Woods' No. 1 Riggs, 4,800 ft. to E line, 200 ft. to N line of Jas. Nowland Sur., 6 miles W of Skidmore ..... Location.
Mauldin et al's No. 1 Kimball, 300 ft. S Grayburg's No. 1-A Kimball, S. Winship Sur. ..... T. D. 3,544 ft.; swabbed 35 bbls. in 8 hrs; going on air lift.

(Continued on Page 126)

SOUTHWEST TEXAS PROVEN AREAS

DOBROWOLSKI POOL—BEXAR COUNTY

Company, farm and location— Remarks:
Morgan Bros.' No. 3 Masterson, 300 ft. S of No. 2 Masterson, Miguel Gortaris Sur. ..... T. D. 550 ft.; set csg.
Collins and Morris' No. 10 Halberdier, J. M. F. Perez Sur. ..... T. D. 410 ft.; drlg.
Boling & Michael's No. 1 Adams, Miguel Gortaris Sur. ..... T. D. 700 ft.; (W.O.).
Patton & Yocum's No. 1 T. Strunk, 1,351 ft. from SE line, 150 ft. from NE line of tract ..... T. D. 210 ft.; drlg.
W. S. Rogers et al's No. 1 L. Donnop, Juan Montez Sur. ..... T. D. 400 ft.; shut down.
A. J. Swearingen's No. 6 Sandemer, 600 ft. S of No. 1, M. Manchaca Sur. ..... Location.
A. J. Swearingen's No. 7 Sandemer, 300 ft. S of No. 6, M. Manchaca Sur. ..... Location.

BRUNER POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, A. Floyd Sur. ..... T. D. 50 ft.; drlg.

EDDINGTON POOL—FALLS COUNTY

Eddington et al's No. 3 Llewellyn, George Allen Sur. ..... T. D. 1,070 ft.; drlg. shale.

DARST CREEK FIELD—GUADALUPE COUNTY

Magnolia Pet. Co.'s No. 8 M. T. Klein, 300 ft. SE of No. 1 ..... T. D. 1,600 ft.; drlg.

CHAPMAN POOL—WILLIAMSON COUNTY

Chapman et al's No. 2 Lawrence, S. Miller Sur. ..... Derrick.
Ertel et al's No. 9 J. C. Abbott, 842 ft. from W and 150 ft. from S line of farm in S. Miller Sur. ..... T. D. 150 ft.; drlg.
Vitex Oil Co.'s No. 8 Kilgore, Simon Miller Sur. ..... T. D. 1,735 ft.; waiting on cement.

PETTUS AREA—BEE COUNTY

J. M. Davis et al's No. 1 Ray, 330 ft. from N and E lines of John W. Williamson Sur. ..... Rigging up.
J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur. ..... T. D. 3,874 ft.; waiting on cement.
Gulf Coast Oil Co.'s No. 2 McKinney, 2,400 ft. to E and 150 ft. to S line of tract ..... Set 10-in. csg. 368 ft.
United Prod. Co.'s No. 32 Ray, G. Habbermacher Sur. ..... T. D. 3,925 ft.; drlg.
United Prod. Co.'s No. 33 Ray ..... T. D. 3,993 ft.; comp. 300 bbls. on tubing.
United Prod. Co.'s No. 37 Ray, 3,200 ft. from SW line, 996 ft. from SE line of Willis A. Moore Sur. ..... Rigging up.
United Prod. Co.'s No. 38 Ray, 900 ft. E, 10° S of No. 35 Ray ..... T. D. 2,750 ft.; drlg.

CARTWRIGHT POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 3 Dunning, M. B. Kilvin Sur. ..... Moving in rig.
Houston Oil Co.'s No. 4 B. L. and C. C. ..... T. D. 5,724 ft.; drlg.
Houston Oil Co.'s No. 23 Cartwright, 691 ft. N, 30° E of No. 11 ..... Location.

(Continued on Page 126)

REMEMBER THE 25 Y

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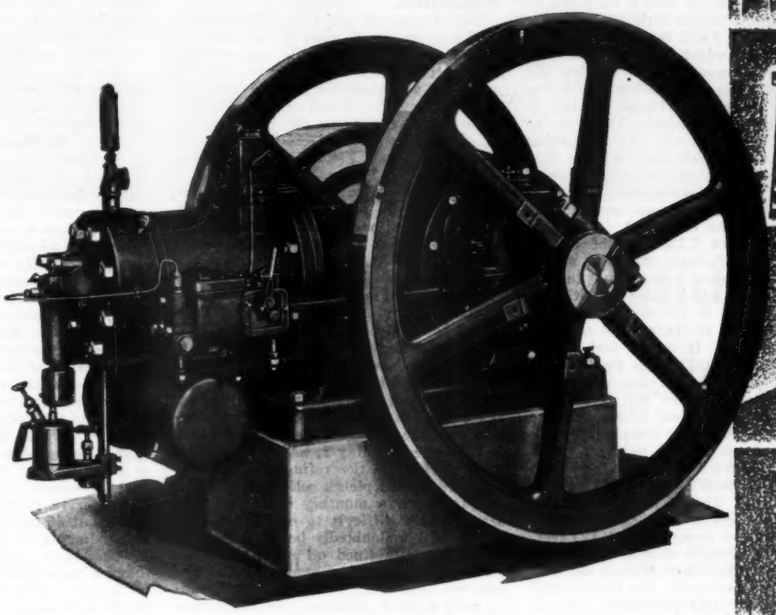
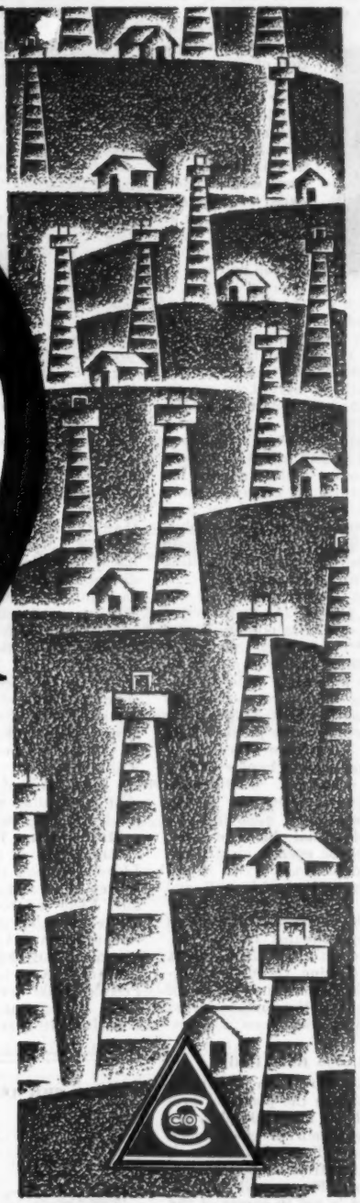
FAIRBANKS-MORSE



Fairbanks-Morse 25 HP Type Y Style HB Oil Engine



The dependability of this engine is borne out by its record. Nearly every production man is familiar with the 25Y, for many years the outstanding engine of its type and size. Nearly 2000 of these engines and the preceding model were placed in beamwell service in the fields surrounding El Dorado, Kansas, alone.

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CPM-3

CONTINENTAL

Find New Deep Zone in Ventura Avenue

Discovery Important, but Not a Factor of Immediate Concern Owing to Decision of Operators to Hold It in Reserve

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., May 4.—Discovery of a new deep prolific zone in the Ventura Avenue Field and completion of an unusually large well in the North Dome of Kettleman Hills featured development work in California during the past week. Both were of extreme importance although the new zone at Ventura Avenue will not become a factor of immediate concern due to the decision of operators to hold it in reserve. There will probably be some deep drilling undertaken around the edge of the field but the Associated, Shell and General Petroleum have tentatively agreed to refrain from producing the new zone until a later date. It is quite likely, however, that they will drill one or more exploratory wells in addition to any necessary offsets resulting from deeper drilling around the edge of the structure. A concerted move has already been started to refrain from all work for a period of six months, during which time the new well will remain closed in, and the outlook for a drilling moratorium is quite favorable.

The Petroleum Securities, an E. L. Doheny concern, focused the attention of operators on the enormous potentiality of the North Dome by recompleting No. 1 Felix after redrilling and deepening it to 8,110 feet. This well blew in late Tuesday night flowing at the rate of 20,000 bbls. of exceptionally clean 37.3 gravity oil per day. It was severely pinched back two hours after completion because of the company's inability to handle such a large volume of crude oil. The limited capacity of gas traps precluded a conclusive production test but upon installation of four additional high pressure traps the well will be opened up a little. Actual production of No. 1 Felix is not ascertainable because both this well and No. 3 Felix are flowing into the same set of traps. The aggregate production of both wells approximates 11,000 bbls. per day at the present time. No. 1 Felix was brought in flowing through a 1½-inch bean but the tremendous volume of oil and gas brought to the surface forced the crew to reduce the bean to five-eighths -inch.

Estimate 15,000 Bbls. Daily

Officials of the Petroleum Securities conservatively estimate the potential production of No. 1 Felix at 15,000 bbls. per day, although field men in close touch with the situation believe that the well will make anywhere from 20,000 to 30,000 bbls. per day. The gas-oil ratio is very favorable and is not in excess of the low ratio established by other wells producing from the deep Ochsner zone. No. 1 Felix was the first well finished by the Petroleum Securities in the North Dome of Kettleman Hills but was subsequently taken off production in order to secure a deeper penetration. It was originally finished in the Elliott high pressure gas zone which produces a condensate in contrast with the normal black oil yielded by the underlying Ochsner zone. The Superior Oil Co. revealed the potentiality of the Ochsner zone last year when it brought in No. 1 Huffman flowing 10,000 bbls. per day from 8,323 feet. As a result of this discovery, the Associated and Petroleum Securities subsequently drilled into the Ochsner zone. No. 1 Felix, if it attains its estimated potential, will be the largest well finished in the Kettleman Hills Field up to the present time and will likewise be the largest well finished in California for a number of years. It is at the present time flowing under a pressure of 700 pounds on the tubing and 1,740 pounds on the casing.

Associated Will Benefit

The Associated Oil Co. has the distinction of discovering the new deep horizon in the Ventura Avenue Field and will consequently show the largest appreciation in property values due to its extensive holdings in this field. The deep zone discovery was No. 57 Lloyd, bottomed at 8,823 feet and finished with a 5-inch liner perforated from 7,012 feet to 8,823 feet. This new well, which threatened several times to get beyond control during the course of drilling work, blew in flowing 4,850 bbls. of 30.6 gravity oil cutting 10 per cent but subsequently built up to 5,500 bbls. of clean oil. It is flowing through a 9 1/64-inch bean with a tubing pressure of 310 pounds and a casing pressure of 1,450 pounds and is producing 4,550,000 feet of natural gas per day in addition to the crude oil. The pipe record consists of 7,139 feet of 9-inch, 4,597 feet of 13⅜-inch, 997 feet of 20-inch and 5,915 feet of 3-inch upset tubing.

No. 57 Lloyd, which came in with one run of the swab, is the deepest flowing well in the world at the present time, as far as is known. It is 334 feet deeper than the Continental's deep producer in the Big Lake Field of Texas. It is not likely that No. 57 Lloyd will retain this distinction for any great length of time as Continental Oil Co. is completing preparations to finish No. 24 Selover, which is believed to have discovered a new deep horizon in the Seal Beach Field of Los Angeles Basin. The latter project, bottomed at 9,054 feet with a 6⅝-inch water string landed and cemented at 8,122 feet, is undergoing a water shutoff test under supervision of the State Mining Bureau. If this test is successful, the Continental will conduct an early production test, at the conclusion of which the well will be shut in pending readjustment of existing crude oil price schedules.

May Increase Recovery 40 Per Cent

Completion of the Associated's No. 57 Lloyd increases the possible ultimate recovery of oil and gas of the Ventura Avenue Field approximately 40 per cent. There are 1,550 acres of proved oil land in the Ventura Avenue Field at the present time. Of this total, the Shell holds 770 acres, Associated 650 acres, General Petroleum 60 acres, Pacific Western 40 acres, Bolsa Chica 15 acres, Petroleum Securities 10 acres and the M. K. T. Oil Co. 5 acres. Productive acreage in this field is conservatively valued at $110,000 per acre, or a total field value of $170,500,000. Estimates of petroleum engineers, adding 40 per cent of the total value on the basis of the Associated's new deep zone discovery, means an increase of $44,000 per acre. This represents an aggregate appreciation of $68,200,000 and increases the total present valuation to $238,700,000.

The Associated and General Petroleum hold acreage on the apex of the structure and their appreciation is consequently higher than the average for the field in as much as properties around the edge of the productive limits of the field will show a recovery below the field average. The Shell also finished a new well in the Ventura Avenue Field during the week when No. 59 Taylor came in under a natural flow doing 1,906 bbls. of clean 38.1 gravity oil per day from 7,123 feet. This new well was finished in the zone which has been undergoing development during the past several years. Previous to discovery of the new deep horizon by the Associated, most of the wells finished in the Ventura Avenue Field were completed between 6,000 feet and 7,500 feet.

Price Readjustment Forecast

There has been a persistent rumor that crude and refined oil prices will be readjusted about the middle of May. This expectation is predicated on the presumption that the new gasoline tax bill which became effective May 1, will have a stabilizing effect on the refined oil market. This bill, which places collection of gasoline taxes on a monthly basis and renders it more difficult to evade tax payments, will undoubtedly be an important factor in the refined oil market. Heretofore a considerable quantity of kerosene was sold tax free after being blended with natural gasoline. In the future motor fuel will be taxed irrespective of whether it is a standard uniform gasoline or a kerosene casinghead blend. Marketers will also be obliged to protect the State against loss by posting substantial bonds upon which the State will be able to enforce collections.

The general belief that a readjustment will be made in crude and refined oil prices in the near future is apparently entertained by William C. McDuffie, president of the Pacific Western Oil Co. and receiver in equity for the Richfield Oil Co. of California. In a recent statement Mr. McDuffie stated:

"Under existing conditions with both crude and gasoline prices depressed neither the producer nor manufacturer can make a profit. The manufacturer who is drawing on high cost stocks is obviously taking a loss. Except in the case of cheap flush production this also applies to the company which is manufacturing and distributing from its own production. The only one in the business who can make a profit is the manufacturer or distributor who can buy his crude or refined products at a price which is in turn ruinous to the seller. Obviously this situation cannot continue to exist without spelling ruin to the entire industry. That it will continue any great length of time is not logical.

In Strategic Position

"California's geographical position puts it in a strategic position as compared with other oil producing states. High gravity crude which was selling in February at prices up to $1.60 per barrel now brings but 35 cents per barrel. It is difficult to justify such a variation from any reasonable economic standpoint. Either the previous price was very much too high or the present price is very much too low. It is probable that both prices represent extremes. Even East Texas crude, reported to be selling at 25 cents per barrel at the well which is nearest to our market and which is comparable in quality to the deep zone production being obtained in the Kettleman Hills Field, cannot be put down in California, if sold at this price at a cost of less than 75 cents a barrel. Oil of equal quality at tidewater in California now has a market of but 35 cents per barrel. Proration of production is in effect in California. It has been conclusively demonstrated that an unjustifiably high price for crude oil is not necessary for its maintenance. With continuance of reasonable proration it is apparent that there is no economic justification for the continuance of present price levels and that both gasoline and crude oil can quite properly be advanced to a level considerably above that now prevailing."

Judge S. L. Strother, who recently issued a preliminary injunction against operators in the North Dome of Kettleman Hills, postponed the effective date from May 1 to June 13, following a motion of counsel for interested operators. At the same time petitions for relief from the terms of the injunction filed by the Kettleman North Dome Association resulted in a modification of the original terms of the injunction. Under the original injunction, producers were prohibited from "blowing any natural gas or other hydrocarbon vapor into the air before the removal of gasoline therefrom, except during five-day flow tests; or blowing off gas after such removal of gasoline, in excess of the tolerance allowed unless such gas has been economically utilized in the generation of light, heat, power or industrial purposes." This was subsequently amended by striking out the phrase beginning with "unless such gas has been economically utilized."

Would Defeat Purpose

To have permitted it to remain, Superior Judge Strother said, would have defeated the very purpose and essence of the restraining order. On April 28, Judge Strother revised the injunction permitting operators in the North Dome to blow off 10 per cent of all gas produced at Kettleman Hills during any one calendar month when there is no outlet available. During any one week under the amended injunction, the blowoff may be as high as 15 per cent, provided, however, that the total wastage for the month does not exceed 10 per cent. In the original injunction the court failed to fix any tolerance but this was subsequently corrected and established as 5 per cent. The Stand-

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.....	77,405
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	.....	.....	.....	.....	798,729	1,377,098
Gasoline	286,409	40,773	326,899	32,371	4,832,630	5,156,250
Kerosene	.....	.....	.....	.....	41,512	.....
Coastwise—						
Crude oil	466,606	66,515	423,000	60,429	6,647,539	4,849,932
Fuel oil	259,335	37,048	247,924	35,418	4,653,349	5,403,029
Diesel and gas oil	31,375	4,482	5,527	790	535,898	628,706
Gasoline	221,004	31,572	459,323	65,618	3,933,457	3,324,508
Kerosene	5,771	824	.....	.....	124,903	33,228
Naphtha distillate	.....	.....	.....	.....	4,952	.....
Exports—						
Crude oil	150,505	21,501	130,074	18,582	2,217,863	2,088,533
Fuel oil	348,517	49,788	78,775	11,254	4,858,613	5,367,640
Diesel and gas oil	69,103	9,872	113,649	16,236	1,186,373	1,651,926
Gasoline	107,234	15,318	364,895	52,128	3,279,668	4,977,244
Kerosene	5,458	779	53,138	7,591	559,229	1,305,965
Lubricants	.....	.....	.....	.....	18,978	10,082

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	88,230
Gasoline	.....	.....	72,495	10,356	187,584	440,188
Lubricants	.....	.....	3,015	431	14,015	2,946
Coastwise—						
Fuel oil	74,512	10,645	157,392	22,485	1,364,674	1,198,260
Diesel and gas oil	.....	.....	.....	.....	88,756	104,327
Gasoline	59,617	8,517	40,147	5,735	933,343	1,273,846
Kerosene	4,964	709	27,173	3,882	88,373	106,349
Exports—						
Crude oil	.....	.....	.....	.....	6,010	3,075
Fuel oil	42,234	6,176	.....	.....	319,512	347,444
Diesel and gas oil	38,740	5,534	.....	.....	232,288	124,540
Gasoline	.....	.....	167,942	23,992	1,075,853	1,200,852
Kerosene	.....	.....	95,451	13,636	285,863	162,499

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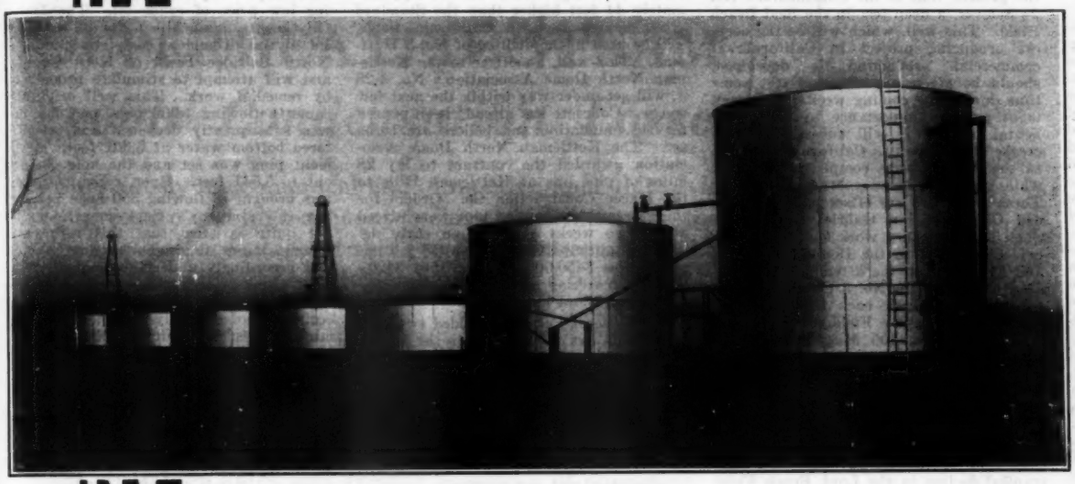

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MALONEY

ard, Kettleman North Dome Association and others entered a plea that a tolerance of 5 per cent was totally inadequate because producing wells must be prepared to meet highly variable demands of the gas companies and was in effect no tolerance at all. As a result of this petition, the court amended the injunction as already outlined.

The Oil Producers Sales Agency, recently organized for the purpose of bringing independent producers under a central organization in order to be in a better position to command better prices for crude oil, elected a permanent board of directors early this week. This included the election of five new members and completes the board of 21, as prescribed by the articles of incorporation. The board as constituted at the present time consists of William Keck, president of the Superior Oil Co.; Lionel T. Barneson, formerly president of the General Petroleum Corp.; C. P. Watson, Milham Exploration Co.; A. Wardman, Santa Fe Springs royalty owner; Jack Doyle of the Doyle Clune Syndicate; Ralph B. Lloyd, organizer and president; Rush M. Blodgett, Getty Oil Co.; Neal H. Anderson, A. T. Jergins, Hooper C. Dunbar, A. E. Bell, C. C. Spicer, H. A. Bardeen, I. H. Sample, R. A. Broomfield, Dana Burks, J. B. Dabney, Ralph M. Smith, S. B. Mosher, William G. Guise and R. R. Templeton. Neal Anderson, chairman of the membership drive committee, announced at the meeting that the sales agency has signed up approximately 172,000 bbls. of oil per day, representing about 200 individual producers.

Huntington Beach

There were no developments of importance in the Huntington Beach townlot area during the past week with the result that there was no change in the status of the potential deep zone being tested out in that section. Several additional locations were staked, however, but this work will be held in abeyance pending the outcome of drilling operations now under way. In the Santa Fe Springs Field, three wells were put on production during the past seven-day period, all of them being recompletions. The largest well finished was the Union Oil Co.'s No. 33 Bell, which was returned to production flowing 1,450 bbls. of clean 29.2 gravity oil per day from the Nordstrum zone at 5,400 feet. This project, which was finished in 1930, has been off production for several months following a gradual decline in production due probably to the fact that the perforations had become clogged up. The Universal Consolidated recompleted No. 6 Blanchard after plugging back to the Meyer zone at 4,500 feet and this well is at the present time doing 95 bbls. of 34.2 gravity oil per day. The Star Petroleum Co.'s No. 3, another recompletion, was returned to production pumping 160 bbls. of 30.1 gravity oil per day from 4,550 feet.

The most interesting drilling project under way in the Los Angeles Basin at the present time is the Continental's No. 24 Selover, a deep test in the Seal Beach Field. This well, which will be the deepest producing project in California if commercial production is developed, should be given a production test some time during the coming week. This well is of primary importance to the Continental because it will substantially increase the company's California reserves, as the Selover lease comprises 70 acres, while the Bixby lease embraces 300 acres. These properties are offset by the Standard Oil Co.'s San Gabriel lease. The Shell has suspended work on No. 7 Manuel, a deep test in the Dominguez Field, and has given up the attempt to develop deep production in No. 3 Childs and has accordingly plugged back to 5,610 feet. In the West Coyote Field, the Standard has shut in No. 105 Murphy, a recent completion, but is proceeding with development work on the Emery and Coyote leases. The Brea Canyon Oil Co. has reached a depth of 6,760 feet in No. 47 Fullerton, a deep test in the Brea Olinda Field of Los Angeles Basin.

Drilling operations have shown a substantial decline in the Long Beach Field during the past seven-day period and a further reduction is anticipated. This decline in drilling has been reflected in a smaller number of completions and this will become more pronounced as time goes on. It is also interesting to note that new wells in the Long Beach Field have shown consistently smaller production. During the past week the General Petroleum completed No. 2 Boyle Perry doing 330 bbls. per day on a compressor after the well was plugged back from 4,002 feet to 3,055 feet. No. 9 Stakemiller of the Shell was another small completion as this project was only good for 100 bbls. per day from 4,811 feet, the hole having been completed with an 8⅝-inch liner carrying 301 feet of perforated. No. 13 Nesa of the Shell, plugged back from 5,314 feet to 4,968 feet, has failed to respond to swabbing operations of several days' duration.

Kettleman Hills

In addition to No. 1 Felix, which the Petroleum Securities finished this week, there are several other potential producers nearing completion and a check indicates the probability that two or three of them should be tanking oil before the close of the current month. The Kettleman North Dome Association and Standard are both expected to chalk up at least one completion within the next 30 days. From a development standpoint, the most interesting feature at Kettleman Hills is the contract let by the Superior Oil Co. for a 176-foot steel derrick. This rig, which will be approximately 44 feet higher than the Standard steel derrick used in California fields, will be used in the drilling of No. 3 Huffman. This well, an offset to the Kettleman North Dome Association's No. 4-28 J, will get under way within the next few weeks. Concrete has already been poured for rig foundation and boilers are being set. The Kettleman North Dome Association awarded the contract to lay 28 miles of pipe line at Kettleman Hills to the Macco Construction Co. Orders for the necessary amount of pipe were placed about two weeks ago and an early delivery is anticipated. The entire job approximates $450,000, divided into $420,000 for material and $30,000 for excavation work and labor.

The General Petroleum added two new wells to its list of producers in the Mount Poso Field of Kern County when Nos. 14 and 29 on the Heisen property were brought in on the beam. The former, bottomed at 1,668 feet, is pumping 148 bbls. of clean 15.9 gravity, while the latter, finished at 1,692 feet, is pumping 151 bbls. of 15.5 gravity oil. Drilling operations in both the Mount Poso and Round Mountain Fields have been at a minimum for almost a year but a further period of inactivity is expected due to the prevailing low price of crude oil. The Union Oil Co. has again killed No. 17 Belridge, its initial Temblor completion in the North Belridge Field of Kern County, and will attempt to stimulate production by remedial work. This well originally came in flowing 1,000 bbls. per day but was subsequently deepened and encountered bottom water at 5,601 feet. A cement plug was set and the hole cleaned out to 5,541 feet. Upon recompletion it was brought in flowing 350 bbls. per day but the company's field department is not quite satisfied that this represents the maximum obtainable production and will accordingly undertake further work. The Standard picked up the top of the Temblor last week at 5,254 feet and is coring ahead carefully in order to determine the best procedure to follow in view of the bottom water encountered by the Union Oil Co. and the failure of the

(Continued on Page 127)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Olympic Realty Corp., No. 1 Barnes, Los Angeles Co.	14- 2-15	5,050	redrilling
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	4,910	sidetracking
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-16	4,950	sd. sh. drilling
Dwyer & Becker, No. 1 Compton, Los Angeles Co.	17- 3-13	4,520	suspended
Allison Synd., No. 1 Baldwin, Los Angeles Co.	8- 2-14	5,110	suspended
Cal. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 3-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,396	suspended
Cal. Ventura Oil Co., No. 2 Hermosa, Los Angeles Co.	31- 3-14	3,300	suspended
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	2,560	suspended
Carniel Oil Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,214	cemented
Hermosa Expl. Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	2,800	cleaning out
Kellogg, W. R., No. 1 Hermosa, Los Angeles Co.	6- 4-14	630	sd. sh. drilling
Westwood Pet., No. 1 Hermosa, Los Angeles Co.	6- 4-14	2,850	sd. sh. drilling
Tulsa Oil Co., No. 1 Hermosa, Los Angeles Co.	6- 4-14	2,830	sd. sh. drilling
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 3-14	4,665	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	780	suspended
Shelley, C. M., No. 1 Torrance, Los Angeles Co.	12- 4-14	rig	suspended
Ewert, W. S., No. 1 Watson, Los Angeles Co.	20- 4-13	....	location
York & Smullin, No. 1 Watson, Los Angeles Co.	29- 4-13	3,698	testing
Wilmington Consd., No. 1 Watson, Los Angeles Co.	17- 4-13	216	sd. drilling
Mack Oil Co., No. 1 Chatsworth, Los Angeles Co.	6- 2-16	rig	suspended
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,190	sd. sh. drilling
Arden Oil Co., No. 1 Puente, Los Angeles Co.	15- 2-10	3,325	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,092	suspended
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	recemented
The Texas Company, No. 1 Montebello, Los Angeles Co.	4- 2-12	3,340	hd. sd. drilling
Huntington Cent. Oil Co., No. 1 Montebello, Los Angeles	34- 1-11	mtl.	building rig
Celito Oil Co., No. 1 Monterey Park, Los Angeles Co.	28- 1-12	5,278	suspended
Hammer, Fred, No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,412	suspended
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	2,280	suspended
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	753	sd. sh. drilling
Nesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	20- 6-10	790	suspended
Gesell, T. F., No. 1 Newport, Orange Co.	29- 6-10	1,470	suspended
Standard, No. 1 Newport, Orange Co.	26- 6-10	4,530	hd. sd. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,519	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	4,690	cleaning out
South Bay Oil Co., No. 1 Border, San Diego Co.	21-18- 2	....	location
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 8	5,250	suspended
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,392	suspended
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	3,267	plug 2,690 ft.
The Texas Company, No. 1 Olive, Orange Co.	7- 4- 9	5,090	sd. sh. drilling
Gieck Oil Co., No. 1 Sunset Beach, Orange Co.	20- 5-11	1,874	sd. sh. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-35	6,302	sd. sh. drilling
Fields Gas Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	5,570	suspended
Barnsdall, No. 1 Gato Ridge, Santa Barbara Co.	9- 8-32	6,225	cleaning out
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-33	1,800	suspended
Smith, W. E., No. 1 Lompoc, Santa Barbara Co.	18- 7-34	....	location
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	5,183	prod. test
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	1,485	suspended
General Pet., No. 136 Goleta Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	2,051	suspended
General Pet., No. 143 Goleta, Santa Barbara Co.	21- 4-28	1,040	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	1,040	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	1,035	suspended
South. Cal. Drig. Co., No. 1 Goleta, Santa Barbara Co.	12- 4-29	1,611	sd. sh. drilling
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,191	cleaning out
Bellview Oil Co., No. 159 Goleta, Santa Barbara Co.	24- 4-29	2,060	br. sh. drilling
Johnson, George, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	2,551	Sespe form.
Cuyama Oil Corp., No. 1 Cuyama, Santa Barbara Co.	12-10-27	rig	suspended
Hart Pet. Co., No. 1 Cuyama, Santa Barbara Co.	27-10-26	rig	suspended
Sovereign Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	5,500	cleaning out
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C. C. M. O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	9,368	br. sh. drilling
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	3,030	hd. sd. drilling
Pure Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Superior Oil Co., No. 1 Sespe, Ventura Co.	14- 4-21	6,550	sd. sh. drilling
Lockwood Valley Oil Co., Well No. 1, Ventura Co.	32- 8-21	1,015	suspended
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-21	3,140	hd. sd. drilling
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	recemented
Kent & McDonald, No. 1 Temblor Hills, Kern Co.	3-32-22	1,672	suspended
Federal Drig. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,367	testing
General Pet., No. 1 Belridge, Kern Co.	30-28-21	4,214	br. sh. drilling
The Texas Company, No. 1 Belridge, Kern Co.	22-27-20	5,045	suspended
Standard, No. 2 Belridge, Kern Co.	31-27-20	5,525	Temblor form.
Ohio Oil Co., No. 1 Belridge, Kern Co.	36-27-20	5,980	recemented
Reward Oil Co., No. 1 Belridge, Kern Co.	34-27-20	5,000	cemented
Union, No. 17 Belridge, Kern Co.	36-27-20	5,541	400 bbls.
Continental, No. 1 Belridge, Kern Co.	36-27-20	4,175	sd. sh. drilling
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,222	cleaning out
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	redrilling
Wicker, Sy, No. 1 Arvin, Kern Co.	12-30-28	1,250	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	8,450	hd. sd. drilling
Shell, No. 2 Weed Patch, Kern Co.	29-30-29	6,380	sd. sh. drilling
Shell, No. 3 Weed Patch, Kern Co.	32-30-29	5,360	sd. sh. drilling
Osborn, Colter, No. 1 Weed Patch, Kern Co.	15-30-29	2,260	sd. sh. drilling
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	6,150	cleaning out
Mohawk Oil Co., No. 2 Weed Patch, Kern Co.	4-31-29	rig	suspended
Alpine Oil Co., No. 1 Weed Patch, Kern Co.	13-31-29	2,785	cleaning out
Standard, No. 1 Devils Den, Kern Co.	14-25-18	3,000	hd. sd. drilling
Hannon, Tom, No. 1 Devils Den, Kern Co.	25-25-18	2,925	cemented
Cumberland Oil Co., No. 1 Devils Den, Kern Co.	21-26-18	1,590	cleaning out
Langstroth, F. B., No. 1 Blackwell Corner, Kern Co.	14-28-19	rig	suspended
Miley, E. J., No. 1 Blackwell Corner, Kern Co.	17-26-19	rig	suspended
Shell, No. 1 Semitropic, Kern Co.	17-27-22	9,700	plug 8,530 ft.
Moran & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	750	suspended
Kendall Dev. Co., No. 1 Mojave, Kern Co.	27-11- 9	100	sd. drilling
Meridan Oil Co., No. 1 Antelope, Kern Co.	11- 9-15	3,804	suspended
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	5,530	suspended
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	4,503	plug 3,685 ft.
Carruthers Oil Co., No. 1 Fresno Co.	4-17-20	rig	suspended
Miracle Oil Co., No. 1 Cuyama, San Luis Obispo Co.	17-10-25	314	suspended
Panorama Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-31-21	4,019	redrilling
Tray El Oil Co., No. 1 Carizzo, San Luis Obispo Co.	7-32-22	1,437	cleaning out
Cities Service, No. 1 Creston, San Luis Obispo Co.	20-28-15	....	material
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,525	suspended
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	916	suspended
Martin, J. D., No. 1 Edna, San Luis Obispo Co.	5-31-13	3,010	suspended
Schockley, C. No. 1 Pismo, San Luis Obispo Co.	13-32-13	3,094	hd. sd. drilling
Pacific Inland, Well No. 1, Monterey Co.	19-23-15	1,160	suspended
Brown, P. A., No. 1 Parkfield, Monterey Co.	15-23-14	816	suspended
Irma Investment Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,304	hd. sd. drilling
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Valley Expl. Co., No. 1 Dudley Ridge, Kings Co.	20-23-20	3,750	plug 3,610 ft.
Kettleman Lakeview, No. 1 Tulare Lake, Kings Co.	11-23-19	1,304	suspended
Purman, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	3,550	br. sh. drilling
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	suspended
Utah Dev. Co., No. 1 Pyramid Hills, Kings Co.	13-24-18	....	grading
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	6,605	sd. sh. drilling
Orinda Pet., Well No. 1, Contra Costa Co.	32- 1- 3	2,010	hd. sd. drilling
Pettingall, C. E., No. 1 Porterville, Tulare Co.	15-22-27	860	hd. sd. drilling
Knapp, George, No. 1 Porterville, Tulare Co.	20-22-27	590	reaming
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	suspended
Larson, S. E., No. 1 Tulare Lake, Tulare Co.	20-24-23	477	sd. drilling
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-16- 4	910	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 3-10	4,117	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	2,520	sd. sh. drilling
Sargent Oil Co., No. 1 Sargent, Santa Clara Co.	1-12- 3	rig	suspended

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Avoids Condensation Losses

It is obviously uneconomical and of no advantage to provide high-pressure and high-capacity boilers for drilling and then have a large percentage of this pressure and capacity dissipated in line condensation losses between the boiler and the cylinders of engine and pump.

Elesco superheaters by adding heat to the steam avoid all such line condensation losses and dry steam at more nearly full boiler pressure reaches the cylinders.

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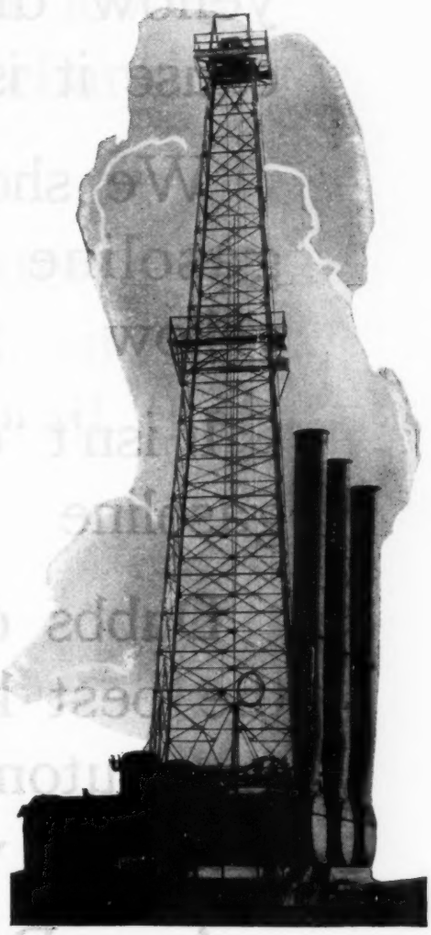

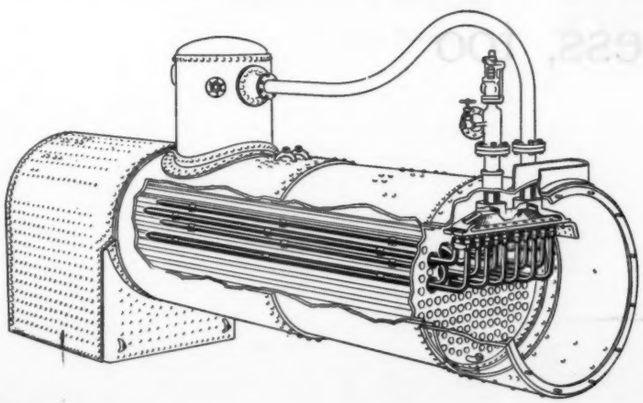

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Color doesn't matter a bit to the engine and, in the last analysis, that's all that counts

Universal Oil Products Co
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Owner and Licensor

Gas Development in Henry County, Ohio

Nine Locations and Eight Wells Spudded in Central Ohio. Good Gas Completion in Monroe County, Indiana. Important Illinois Tests

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, May 4.—An interesting development is under way in what is known as the McClure Field, in Henry County, which lies just west of Wood County, in the old Lima Field. The operations are mostly for natural gas. One well has been brought in by the Lake Shore & Southwestern Oil & Metal Co., of Wilmington, Del., along with the Henry County Oil & Gas Co., on the E. Buel Fiser farm, Section 27, Damascus Township, Henry County, which is reported showing for close to 1,000,000 feet from the Trenton lime formation. This company has five more tests under way in the same vicinity: No. 1 E. J. Hockman, Section 23, Damascus Township; No. 1 Nettie McLain, Section 12; No. 1 Francis J. Bell, Section 13; No. 1 W. F. C. McKinney, Section 14; all in Damascus Township, and No. 1 Frederick Schafer, Section 23, Monroe Township, same county and near the hamlet of Malinta. This gas, according to report, will be piped to Napoleon and other towns and villages in that immediate vicinity.

In the Findlay Field, the Ridge Oil & Gas Co.'s No. 5 Elnora Cross farm, Section 35, Biglick Township, east of Findlay, in Hancock County, came in as a surprise well with an initial production of 70 bbls. In the same county, Cass Township, the Ohio Oil Co. abandoned Nos. 1, 3, 4 and 6, George Nelson farm, Section 22; Nos. 4, 5, 9, 10, 13, 14 and 15, James E. Hudson farm, Section 15; also Nos. 1 and 2 on the Samuel Swab No. 2 farm, in Section 15, same township. In Liberty Township, same county, the Ohio Oil Co. abandoned Nos. 2 and 10 C. Ewing farm, Section 9, and Herman A. Bauer pulled out No. 1 on his own farm, Section 24, same township.

In Noble Township, Auglaize County, Harry Manion and others are drilling on the George and Mollie Schillinger farm, Section 11.

Report is that Gebhart, Fraker and others will utilize the gas they found on the Garrett Verberg farm, Section 2, Fitchville Township, Huron County, at 330-35 feet. This well was drilled to a total depth of 1,049 feet, and at that depth no other showing was found.

CENTRAL OHIO

In the Central Ohio Field but 3 completions were reported, 9 locations made and 8 wells started spudding, a total of 17 in new work. There has been a scarcity of water for drilling purposes over the field, but this was relieved by a heavy rain during the past week.

In Ashland County, Jackson Township, the Ohio Fuel Gas Co. got a gas well in No. 2-5,475 on the Wade Welch farm, Section 18, while the Appalachian Gas Corp. reported a dry hole in No. 1 on the Kent Welch farm, Section 7, same township, at a depth of 2,945 feet. Commonwealth Gas Corp. made a location on the John A. Stone farm, Section 3, Montgomery Township, same county.

In Medina County, Homer Township, the Ohio Fuel Gas Co.'s No. 1-5,472 on the A. E. Gates farm, Section 14, is a fairly nice gas well. The Commonwealth Gas Corp. made a location on the Charles Fenstermaker farm, Section 15, same township. Edward Obermiller is drilling on the Minnie Metzger farm, Section 16, Liverpool Township.

In Muskingum County, Brush Creek Township, the Fritz Oil & Gas Co. is starting No. 1 on the W. W. Swingle heirs' farm, Section 29.

In Athens County, Frank O'Mara is drilling No. 11 on the Hocking-Athens Coal Co.'s land, Section 35, York Township.

Stark Township, Jackson County, is one of the most active development areas at the present time in the field, with 15 rigs, locations and drilling wells. The Medford Oil & Gas Co. is drilling a second test on the John C. Easterday farm, Section 35. F. A. Brendall and others staked a location on the Sam Willaman farm, Section 10, same township. Same parties made a location on the T. J. and F. A. Lesser farm, Section 12, Lawrence Township. In Paris Township, the Timken Roller Bearing Co. made a location on the H. H. and M. Essick farm, Section 11, and the East Ohio Gas Co. has a location on the H. Starly farm, Section 29, same township.

In Fairfield County, Berne Township, the City Natural Gas Works is drilling No. 4 Christian Schull farm, Section 12.

In Guernsey County, Jackson Township, W. C. Urban and others are drilling on the Frank Fabion farm, Section 13.

In Belmont County, Somerset Township, Washmuth & Callahand are drilling on the G. and H. C. Butler farm, Section 20, and J. W. Kirk and others made a location on the J. N. Carter farm, Section 23.

Scattered Pickups

Medford Oil & Gas Co. is shut down on account of engine trouble on the Lantz-Clovis farm, Section 25, Jackson Township, Stark County, at a depth of 4,350 feet, and is drilling close around 4,000 feet in No. 2 Firestone farm, Section 35, same township.

Barnhart and others are drilling on the George Elser farm, Section 4, Chester Township, Wayne County.

Shenker and others are starting a test on the Elmer L. Vansickle farm, Section 5, Reading Township, Perry County.

National Geophysical Survey Co. has a machine in to drill on the Joseph W. Vause farm, Section 35, Harrison Township, Pickaway County.

Doctor Bing and others have a light gas showing on the Everette Lambert farm, Section 5, Rutland Township, Meigs County, in the Maxon sand from 851-70 feet. J. E. Clark is drilling a second test on the Alice Swearinger farm, Section 25, Sutton Township, same county. Caywood & Palmer are held up at 400 feet in No. 1 Edgar Irvin farm, Section 34, Lebanon Township, same county.

INDIANA

One of the interesting finds in Indiana is the completion by the Ohio Oil Co. of a test on the Jacob Neal farm, SE SE Section 7, Benton Township, Monroe County, which showed a volume of 1,080,000 feet and a 225-pound pressure at a total depth of 799 feet. The Petroleum Exploration Co. and the Ohio Oil Co. are drilling a second test on the M. M. Young heirs farm, SE NW Section 7, Benton Township, same county, where the two companies have a large acreage.

Shell Petroleum Corp. is reported drilling a second test on the John Emison farm in Survey 11, Busseron Township, Knox County. Two other wells are under way in the same county, where Gardner Petroleum Co. is drilling on the J. P. Beard farm, SW Section 10, same township, and Wells & Joyes are also drilling on the J. P. and R. A. Beard farm, NW Section 22, also in Busseron Township.

Fred McManus is drilling for gas near Carthage in Ripley Township, Rush County. Central Trust Co. is drilling on the William Cross, Section 8, Jackson Township, same county.

Wiser Oil Co. is drilling on the Charles C. Doidge, NW NW Section 24, Washington Township, Pike County.

James E. Young is putting down a test on the William E. Wallace farm, NE NE Section 36, Veale Township, Daviess County.

Wade Connely has started a test on the R. B. Gilbert farm, NE SW NW Section 29, Haddon Township, Sullivan County.

In Perry County, Conyers & Bugg are drilling No. 3 Lee Aders, SE SW Section 19, Clark Township, and Bugg & Walters drilling No. 1 Ed Cassidy, NE SE, Leopold Township, same county.

ILLINOIS

Two important test wells have been started near the old field close to Westfield, and north and west of Casey. In Edgar County, Embarras Township, W. D. McColpin is drilling on the J. B. Weiland farm, Section 32, and the other is being drilled by Walter Cline and others on the A. D. Hildreth farm, Section 27, Lafayette Township, Coles County.

L. C. McDowell and others are drilling No. 11 on the J. F. Higgins No. 3 farm, Section 21, Montgomery Township, Crawford County, in the Robinson-Oblong Field.

In the Allendale Field, Wabash Township, Wabash County, the Robinson Oil Co. is drilling No. 3 William Schaeffer farm, Section 15.

Thomas Folks is shut down on the Wineburg Brothers farm, Section 18, Lakeside Township, Clinton County, and the Eastern Oil & Gas Co. is drilling on the H. Holtgrave farm, Section 35, St. Rose Township, same county.

Bryant Lee Petroleum Co. is drilling on the William Langewich farm, Section 4, Centralia Township, Marion County.

Three wells that have been drilling for some time, but not yet completed, in the Dupo Field in Sugar Loaf Township, St. Clair County, by John Lutton on his own property, Section 17; Hans Wolf's No. 3 Oliver Anderline, Section 33, and Ritter and others' No. 1 William Scheifler in Survey 5, Millstadt section. In this same field, Robert A. Murray and others abandoned No. 1 L. H. Reichert, Section 21, and Cole, Esther and others did the same with No. 1 Mary A. Bostwick, same section.

KENTUCKY WELLS

In the Sebree Field in Webster County, Christian and Schmitt's No. 2 Edward Walker farm, 2 miles north of Sebree, produced an initial of 10 bbls. No. 3, same farm, was dry, while No. 4 produced an initial of 5 bbls.

Cameron & Thompson's latest completion on the Nina Wilhite farm, in the Gridstone Hill area of McLean County, is a very fair well, being estimated around 50 bbls. or better initial. Ellis & Young's test on the Guy S. Turner farm, west of the town of Island, same county, and known as the Island well, was drilled to a total depth of 3,520 feet, and one of the deepest holes in Kentucky, which cost around $40,000 to drill. Nothing was found at the greater depth, but the well was shot in the shale, which had a thickness of 250 feet, bringing a gas volume of 77,000 feet of gas, and was the first instance where the shale formation was shot in the Western Kentucky Field.

CEMENTING GRAVES SAND WELLS IN SMACKOVER FIELD RECOMMENDED

By R. G. Scott
Sinclair Oil & Gas Co.*

Over different parts of the Smackover Field Graves sand wells were drilled in 1925.

On account of the large amount of water to pump for a small recovery of oil, quite a number of these wells have been worked over, either trying to or shutting part or all of the water, by cementing or plugging off part of the sand, or by cementing off all of the sand and then redrilling out part of the cement, just far enough to get outside of the casing.

I find in some of the wells it is profitable to cement off the bottom part of the Graves sand, which would cut off the water or a part of the water.

Where we were pumping 1,000 bbls. of fluid per day we would cut this amount down to 100 to 150 bbls. of fluid per day with a considerable increase in the amount of oil, some of the wells making pipe line oil for a while.

Then on some of the wells by cementing off all of the sand and redrilling out the cement just enough to get outside of the casing, they would make pipe line oil, or just a small amount of water for a while.

In the most cases this water would increase, until the wells would increase to an enormous amount of water again, which appeared to be caused by the water cutting around the cement plug.

As these wells would get down pretty low in production I found it profitable to cement off all of the Graves sand, cementing back up into the casing.

Then after bailing and testing out casing, perforate our casing in the Nachitosh sand, or the Meechan sand.

Washing in Cement

First clean out with cable tools to bottom (if possible) and then run a string of tubing to bottom and wash with fresh water for several hours; it would not hurt to let the water run all night before cementing.

Then while the water is running in the tubing, dump the cement in a box or trough and gradually wash it down, while the water is still running in the tubing.

The amount of cement to be estimated by the amount of open hole or size of cavity. This can partly be determined if the well flowed and made lots of sand, or was blown with gas or air.

We have used from 15 to 150 sacks of cement but on the majority of our wells we have used from 15 to 25 sacks.

After the cement has been washed in, we raise the tubing from one to two joints and continue to let the fresh water run for an hour or so to wash the tubing out good, and then turn the water into the casing, and start pulling the tubing, in order to get it out so it will not be cemented in.

We have let this fresh water run for two or three hours unless the casing fills up sooner.

If the casing does not fill up with water, the amount of cement can be de-

(Continued on Page 172)

*Paper read before the El Dorado, Ark., chapter of American Petroleum Institute

FLEXIBLE THINGS ENDURE

THE SLENDER MAST QUIVERS, BENDS AND CARRIES A HEAVY LOAD OF SAIL

FLEXIBLE CUPS ON THE GUIBERSON SWAB GIVE WAY TO PROTRUSIONS and LIFT THE FULL LOAD OF OIL

A Spanking breeze means flapping sails, swinging booms and constant jerking and tugging at the slim pole that is the most important thing aboard. But it gives, bends and carries the load.

The Flexible Cups of the Guiberson Swab, passing upward through pitted, dented and worn casing, escape damaging contact with the rough places because of their pliant nature, yet maintain a perfect seal and lift all the fluid. Guide wires steer the cup rims as they pass over the dangerous areas. The heavier the load, the tighter the seal with the casing wall. Pressure from below collapses the cups, allowing far speedier passage into the hole. The Guiberson Swab is doing most of the world's swabbing today.

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GUIBERSON

BETTER BE SAFE THAN SORRY

Close-ups of Oil Men by The Journal's Cameras

1—Eddie Showers, drilling contractor and operator; W. A. Andrews, driller; and John E. Farrell. All interested in East Texas operations. 2—R. L. Pike and F. A. Coyle, Deep Rock Oil Company, Joiner Pool, Rusk County, Texas. 3—Clint Kimbro, auditor, Texas Pacific Coal & Oil Company, Thurber, Tex. 4—Jack Berry, chief engineer, and F. L. McMullins, oiler, Phillips Petroleum Company, Pampa, Tex. 5—Joe Haygood, Humble Pipe Line Company, McCamey, Tex. 6—G. C. Tisdale, W. Grant Blanchard and D. A. Burris, independent operators, Dallas and Tyler, Tex. 7—Henry L. Phillips, president, Sinclair Oil & Gas Company, Tulsa. 8—G. C. Rosenthal, engineer, Humble Pipe Line Company, Longview, Tex. 9—E. C. Walters, superintendent, Grayco compressor station, Phillips Gas Company, Pampa, Tex.

Proration Now in Effect in East Texas

Production of 345,475 Bbls. Daily Likely to Be Reduced Following New Rule. Lathrop and Kilgore Pools Extended. Activity Unabated

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 4.—The new proration schedule for East Texas allowing a daily total of 160,000 bbls. was put into effect on May 1 by the Railroad Commission, portioning out 65,000 bbls. per day for the Joiner or Henderson area in Rusk County, 60,000 bbls. per day for the Kilgore area, and 35,000 bbls. per day for the Lathrop or Longview area in Gregg County. This daily allowable is 30,000 bbls. over the first allowable set which gave the fields a daily average of 60,000, 40,000 and 30,000 bbls. respectively. Production for the past week averaged 300,924 bbls. per day for the three areas, and this week production jumped to 345,475 bbls. per day, the Kilgore area leading with 191,185 bbls., the Joiner area producing 84,610 bbls. and the Lathrop or Gregg County area producing 69,680 bbls. per day. The week's total production mounted to 2,418,325 bbls. but this figure will no doubt be cut to a great extent during the following week due to the fact that proration is now in effect on all but a few wells in the three areas. Considerable oil is going to storage in the fields, an average of around 40,000 bbls. per day, while the pipe lines are carrying out nearly 90,000 bbls. per day, or approximately one-third of the amount of runs which are being made through trunk lines from West Texas and Lea County, New Mexico, each week.

Rail Transportation

The four railroads transporting crude from the three areas are the Santa Fe, Texas and Pacific, Cotton Belt and I.&G.N. These three lines are transporting over 200,000 bbls. per day from the many car racks located at various places along the lines, but near production. Friars Switch, Willow Springs, Arp, Overton, Longview, Reed Switch, Amigo and Kilgore are the centers of loading rack facilities and shipments. Two refineries are in operation at Friars Switch, the East Texas Refining Co.'s plant and Beacon Oil & Refining Co.'s plant; one plant is in operation at Longview, the East Texas Refining Co.'s plant, and the Amarillo Producers & Refining Co.'s 3,000-bbl. plant at Overton is almost ready to start, while the Taylor Refining Co. is busily engaged in completing its plant at Tyler. A 500-bbl. topping plant at Arp will soon be put in operation by the Boone Refining Co. The McMillan Refining Co. is constructing a 7,000-bbl. plant near Willow Springs, Gregg County, and the Slack Refining Co. is constructing a 2,500-bbl. plant near this place, on the T.&P. Railroad.

Over 750 Locations

There are over 750 locations, tests rigging up, derricks and tests drilling in 10 counties of East Texas, 650 of these being in Gregg, Smith and Rusk Counties. There were 74 wells completed in the district this week, boosting production in the three areas, and proving more acreage good for production. One company has estimated that 90,000 acres in Upshur, Gregg, Rusk and Smith Counties will eventually be drilled up and produce, but this estimate may soon be discarded for a higher one due to the fact that outskirt wells continue to extend the fields, especially in Gregg County and the Joiner area.

Sinclair Oil & Gas Co.'s No. 1 Wiley in the J. Jordan Survey, Smith County, approximately 1 mile west of the nearest producer in the Joiner Pool, came in on April 27 flowing 150 bbls. of fluid, of which 70 per cent was salt water. The company plugged back with cement this week from a total depth of 3,865 feet to shut off the water, and the well is now standing shut down on cement to set.

Sinclair Oil & Gas Co.'s No. 1 Cole in the Samuel Brooks Survey, the 2½-mile extension well in Gregg County which blew in on April 27 catching fire and killing nine men, was estimated at 25,000 bbls. per day with an estimated 8,000,000 feet of gas.

Water in Kilgore Area

The Kilgore area, Rusk County, continues to make water, and other wells coming in on production this week showed some salt water, while owners of those previously making water have pinched them in to keep down the water or plugged back to shut it off. The water level seems to be fairly well established as being around 3.315-25 feet below sea level, and wells drilled to this depth are considered dangerously situated, and can soon expect water encroachment if it does not appear when the well is completed.

Four of the major operators in the Kilgore Pool entered into a pact on April 28 to prevent further encroachment of salt water in this field, all agreeing to shut in their wells to a minimum of production to hold back the water. These companies are the Humble Oil & Refining Co., Gulf Production Co., Houston Oil Co. and Magnolia Petroleum Co. These companies are also making an effort to get other producers in the field to come to the same terms to benefit all producers in the field. Proration will have its good results in this field by shutting in the wells to about 50 per cent of their daily capacity, thereby helping to keep back the water which now appears as a great threat to the wells.

The Lathrop and Joiner Pools have not encountered salt water trouble like several of the wells in the Kilgore Pool, but the fear has been established in the minds of producers in those two areas, and they will probably be more wary, and abandon drilling their holes too deep before they encounter the same trouble, and start salt water intrusion in those fields.

EAST CENTRAL TEXAS WILDCATS

Week Ending May 4

CHEROKEE COUNTY

Company, well, farm name, section and block—	Remarks:
Ben Banner's No. 1 J. Williams Estate. 150 ft. S and 300 ft. W of SE cor. of the N Hogg heirs and in the J. L. Hogg heirs Sur.	Location.
D. H. Byrd et al's No. 1 Dixie, 1,385 ft. from N along E line of G. W. Forman Sur. from NW cor. of W. H. Felder 854-ac. tract and 150 ft. W at right angles to E line	Shut down 3,850 ft.
Rowan and Nichols' No. 1 Owsley, 530 ft. from N and 1,530 ft. from E line of Loman Sur.	Sand 3,535-56 ft.; preparing to core 3,556 ft.
Fain and McGaha's No. 1 W. A. Shaw, 990 ft. from S and 1,400 ft. from W of W. A. Shaw 128-ac. tract, Isaac Reed heirs Sur.	Moving in rig.
McDonald Bros.' No. 1 Newton, center of 113-ac. tract, Thomas Quevedo Sur., 3 miles N of Jacksonville	Derrick.
Sinclair Oil & Gas Co.'s No. 1 G. T. Martin, 200 ft. from N and 629 ft. from W line of 62.8-ac. tract, Larkin Baker League Sur.	Rig up and shut down.
Sinclair Oil & Gas Co.'s No. 1 Thomas McRae, 330 ft. from E and 4,989 ft. from S of farm, F. J. Vallanova Sur.	Shut down 3,909 ft.
William A. Stone's No. 1 Blount Decker, 900 ft. E of E line of S. Selman Sur. and 1,200 ft. S of N line of E. M. Decker 406-ac. tract in George Ruddle Sur.	Drlg. 4,200 ft.
Walton Oil Co.'s No. 1 E. Singletary, 250 ft. W and 150 ft. N of NE cor. of M. Lacey Sur. and in Water Sur. on Singletary 84-ac. tract	Drlg. 2,200 ft.

DELTA COUNTY

Delta Development Co.'s No. 2 Hays Kinney, 300 ft. S of No. 1 Cooper, Townsite Sur.	Coring 3,060 ft.
D. S. Hoods' No. 1 J. J. Balser, 185 ft. from S and 580 ft. W of Balser 40-ac. tract in SE cor. T. B. Laddin Sur.	Shut down 1,559 ft.
Worthington and Stedman's No. 1 W. H. Dejehett, 150 ft. from S and 776 ft. from W of 52-ac. tract, E. Chick Sur.	Shut down 2,300 ft.

GREGG COUNTY

Arkansas Fuel Oil Co.'s No. 1 J. C. and R. S. McKinley, 250 ft. from N and 175 ft. from E of 160-ac. tract and 87-ac. lease, G. W. Hooper Sur.	Location.
Arkansas Fuel Oil Co.'s No. 1 G. A. Castleberry, 250 ft. from S and 250 ft. from W of 52-ac. tract and lease, Dolores Sanches Sur.	Drlg. 1,000 ft.
Arkansas Fuel Oil Co.'s No. 2 P. D. Harrison, 282 ft. S and 143 ft. E of SE cor. of Tenery 40-ac. tract, William Robinson Sur.	Derrick pattern.
P. P. Ash et al's No. 1 A. H. Tubbs, 1,550 ft. from S and 4,120 ft. from E of survey, Dolores Sanches Sur.	Derrick.
Ball et al's No. 1 L. D. Campbell, 540 ft. from N and 219 ft. from E of 72½-ac. tract, David Ferguson Sur.	Derrick.
Badgett and Cooper's No. 1 C. C. Clemons, 155 ft. from E and 155 ft. from S of 60-ac. tract, Dolores Sanches Sur.	Waiting on csg.; T. D. 3,592 ft.
Barnsdall Refining Co.'s No. 1 J. McGrede, 150 ft. from E and 150 ft. from S of 100-ac. lease and W offset to Pilot Oil Co.'s No. 1 McGrede, Dolores Sanches Sur.	Drlg. 2,530 ft.
Bell & Graddy's No. 1 M. George (or Daniels), 225 ft. S and 650 ft. W of 26-ac. tract, Mary Van Winkle Sur.	Fishing; T. D. 2,719 ft.
Blackstock et al's No. 1 F. E. McGrede, 150 ft. from E and 150 ft. from S of 36-ac. tract and 10-ac. tract, Dolores Sanches Sur.	Spudding.
Bridwell et al's No. 1 D. L. Magrill, 169 ft. from E line and 150 ft. from S line of 45-ac. tract, Dolores Sanches Sur.	Drlg. 2,825 ft.
B. L. Brookin's No. 1 J. M. Tuttle, 150 ft. from N and 205 ft. from E of 12½-ac. lease, William H. Castleberry Sur.	Rig up.
W. H. Byrd, Jr.'s No. 1 Art Mitchell, 150 ft. from E and 150 ft. from S of 15-ac. lease, 1,300 ft. from S and 850 ft. from E of survey, John Carrithers Sur.	Run liner; T. D. 3,594 ft.

(Continued on Page 108)

EAST CENTRAL TEXAS PRODUCTION

Boggy Creek	2,500
Cedar Creek	25
Currie	255
Hill County	30
Mexia	3,233
Nigger Creek	130
Powell	4,113
Richland	110
Rusk and Gregg Counties	345,475
Van	40,379
Wortham	445
Total	396,705
Week ended April 25	352,248
Increase	44,457

Seventeen Showing Water

There are 17 wells in the Kilgore Pool now showing water, or at least this number has been reported as showing water. There may be others which are making water that have not been mentioned. The Magnolia Petroleum Co.'s No. 1 Florey and Burton Drilling Co.'s No. 1 Florey, both in the Peter Holmes Survey, were the first to show water. Sun Oil Co.'s No. 1 Barker in the A. M. Ryan Survey, not quite a half mile south of the Magnolia well, is also making water. East Texas Refining Co.'s No. 1 Wills, one-half mile northeast of the Burton well, is making water. It is pinched to 10 bbls. per hour while waiting on pipe line connection. Killiam & Phillips' No. 1 McNeeley in the Robert W. Smith Survey and Turman Oil Co.'s No. 1 Brightwell in the Smith Survey are also making water, as is East Texas Refining Co.'s No. 2 Wills. Luling Oil & Gas Co.'s No. 1 Brightwell, Gulf Production Co.'s No. 1 Birdsong, Shell Petroleum Corp.'s No. 1 Wills, Blackstock's Nos. 1 and 2 Brightwell are others making water. Several other wells reported as making water are doubtful, as field men report them making some water, while their owners deny such reports. Practically all of these wells are on the west, northwest and in the southwest part of the Kilgore Pool, two or three of them considered as in the heart of the pool, and exceptionally ominous wells.

Lathrop Pool Extension

Eslick and Little's No. 1 Nicholson in the Marshall Mann Survey, 2½ miles north of the nearest production in the Lathrop Pool, Gregg County, came in this week showing as one of the best wells of the pool, and the greatest extension of the week in any of the three areas. Estimates placed the capacity of the well around 25,000 bbls. due to the fact that a 20,000-bbl. capacity oil and gas separator failed to accommodate the flow from two 4-inch lines, which were attached, one to the tubing and one to the casing. Sand was formerly cored from 3,659-76 feet, the latter being total depth of the hole. Production cannot run much farther north than this well as a dry hole was drilled over the line in Upshur County a short time ago, limiting the pool in that direction.

Hurlbut and Brown's No. 1 Mackey, in the G. V. Chambers Survey, 2 miles northeast of the above mentioned well, is an interesting test, running 20 feet higher on the Pecan Gap than the Nicholson well, and may prove another extension to the pool, running production north and west of the Mamie Hammond dry hole and the DeArmand "duster." The test is now drilling below 2,500 feet. Elevation is 322 feet.

Kilgore Nearing Joiner

The Kilgore Pool was given another extension this week, 1½ miles south in the direction of the Joiner Pool. The Magnolia Petroleum Co.'s No. 1 Still, in the M. McCabe Survey, is responsible for this new link between the two producing areas. The sand was topped at 3,643 feet, and the hole drilled to 3,665 feet before

(Continued on Page 68)

Four Big Lake Area Deep Wells Shut in

Conserve Sweet Gas for Domestic and Industrial Use. New Potentials for Yates, Crane and Panhandle. North Texas Purchases Increased

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 4.—The Continental Oil Co., Group No. 1 Oil Corp. and Big Lake Oil Co., producers in the Big Lake Field, Reagan County, have agreed to shut in four of the nine deep producers to conserve the sweet gas which may be assimilated both for domestic and industrial purposes, one of the few sweet, nonsulphurous gases to be used in West Texas. Group No. 1 Oil Corp. and Continental Oil Co. will probably shut in Nos. 3-B and 2-B University as soon as working over of No. 4-B is completed, and the Big Lake Oil Co. will shut in its two offsets, Nos. 2-C and 3-C University. No. 1-B is producing around 2,660 bbls. per day, No. 2-B is shut in; No. 3-B is producing better than 1,550 bbls. per day, and No. 4-B is being worked over. Big Lake Oil Co.'s No. 1-C is producing 820 bbls.; No. 2-C is producing 1,630 bbls.; No. 3-C is producing 170 bbls.; No. 4-C is producing 3,145 bbls.; and No. 5-C is producing 2,085 bbls.

Special 5½-inch casing is being run in No. 4-B University, this pipe to serve as tubing also; the tubing which was previously run is now being pulled.

The 78 miles of 12-inch gas line from the deep producers in the field to San Angelo, and the 40 miles of 8-inch from the field to Rio Pecos are now in operation, but have a total capacity of only 18,000,000 feet per day, but a small percentage of the total gas capacity of the nine deep producers if they were allowed to flow open. The railroad commission has been especially desirous to see the companies conserve the gas from these deep wells, and cut down the gas-oil ratio in the wells, and the companies have been complying with its desires as rapidly as they could recondition the wells and run the special casing and tubing that was necessary in shutting them in to the desired amounts.

New potentials for the Yates and Crane County Fields are as follows: Yates Field, for the 15-day proration period from May 1 to 15, 1931, is 2,753,768 bbls. in 12 hours, with a total outlet of 70,000 bbls. from 400 producing wells. The Crane-Upton district's potential is 50,640 bbls. for the same period with the outlet placed at 18,373 bbls. daily. There are 597 wells producing in these two areas.

Best Well in Irion

Brazelton and others' No. 1 Nutt, located in the Gonzales County Schools Lands Survey, in the shallow pool of Irion County, was completed this week for the best well of the pool, producing 7 bbls. per hour at a total depth of 1,463 feet after plugging back 1 foot, to where it topped the pay sand. Elevation of the well is 2,348 feet. A showing of salt water at 1,464 feet was responsible for the owners plugging back to prevent ruination of the well which is the ninth producer for the small shallow, sweet, high gravity oil, producing pool.

WICHITA FALLS DISTRICT

The Deep Oil Development Co. has completed cleaning out its No. 1 Munger in Block 30, K.W.V.L. Survey, Wichita County, after it was shot to 3,950 feet. A string of 7-inch casing will be run and a test made, the hole standing full of oil, and the well heading intermittently every day.

Good news was received in the North Texas District on April 30 when the Humble Oil & Refining Co. announced that effective May 1 its purchases from wells connected in the district would be increased to 45 per cent of the output, the proration umpire's allowable, instead of only 28 per cent as it has been purchasing in the past. This gives a good many of the producers a great lift in marketing their oil. Stanolind Pipe Line Co. also announced it would increase its takings in Wilbarger County from 28 to 45 per cent of the umpire's allowable. These takings will come from wells already connected by Stanolind gathering lines.

RUNS THROUGH TRUNK LINES

Company, size and location—	Bbls.
Atlantic, 10-inch, Houston	13,092
Gulf, 10-inch, Ranger	22,094
Humble, 2 and 8-inch, San Angelo	22,219
Humble, 10 and 12-inch, Conyn	34,692
Illinois, 2 and 8-inch, Del Rio	25,838
Magnolia, 8-inch, De Leon	20,146
Pasotex, 8-inch, El Paso	11,981
Shell, 10-inch, Healdton	26,920
Shell, 10-inch, Houston	11,684
Texas, 12-inch, Houston	12,516
Total	197,182

RUNS TO WEST TEXAS REFINERIES

Big Spring Ref. Co., Big Spring	997
Burford Ref. Co., Pecos	4,242
Cosden Ref. Co., Big Spring	3,034
Col-Tex Ref. Co., Colorado	3,226
Humble Oil & Ref. Co., McCamey	13,291
Great Western Ref. Co., Big Spring	2,410
Tonkawa Ref. Co., Pyote	1,600
Wickett Ref. Co., Wickett	288
Total	39,088

TANK CAR SHIPMENTS

Big Lake from Texon	3,000
Fox and Thorsen from Mertzon	54
Thomas Brann from Grant City	...
Southern Crude from Wickett	6,419
Total	9,473
Total daily average production	243,604
Total daily average distribution	245,743
Daily average from storage	2,139

COMPLETIONS IN WEST TEXAS

Irion County

Brazelton and others' No. 1 Nutt, top pay 1,463 feet, initial production 7 bbls. per hour on pump, total depth 1,464 feet.

Jones County

Jameerson's No. 1 King, show oil 1,965-71 feet, elevation 1,653 feet, dry and abandoned, total depth 2,088 feet.

Ward County

Chester Smith's No. 1 Boogher, top pay 2,164 feet, initial production 240 bbls., total depth 2,165 feet. Gulf Production Co.'s No. 3 Wristen Brothers, temporarily abandoned, total depth 2,577 feet, plugged back to 2,477 feet.

Pecos County

Southern Oil Corp.'s No. 3 Tippett, top pay 469 feet, initial production 100 bbls., total depth 511 feet.

Upton County

Duffy's No. 4 McClintic, top salt 1,095 feet, top pay 2,770 feet, initial production 100 bbls., total depth 3,110 feet.

WEST TEXAS PRODUCTION
Week Ending May 2, 1931

County—	No. wells	Bbls
Andrews	3	0
Crane	377	18,767
Crockett	51	1,551
Ector	78	7,062
Fisher	10	721
Garza	0	21
Howard-Glasscock	539	29,609
Irion	8	53
Jones	79	1,263
Loving	39	3,410
Mitchell	111	2,001
Pecos	543	71,858
Reagan	255	20,554
Runnels	5	100
Scurry	5	0
Upton	258	4,616
Taylor	3	60
Ward	57	3,915
Winkler	595	44,943
Total production this week		210,504
Total production last week		219,599
Decrease		9,095

PANHANDLE DISTRICT

The new potential of the Panhandle fields has been set at 141,534 bbls. daily, with a total outlet of 40,000 bbls., an increase of 4,000 bbls. per day. There are 1,985 wells producing in the various counties in this district, the majority of them being in Gray, Hutchinson and Carson Counties. Activities have been slowed down to a minimum in this district, with but few completions each week, and only a few locations being made, most of the locations being staked in gas producing counties of Moore and Wheeler Counties, for gas is more de-

(Continued on Page 105)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended May 4

ANDREWS COUNTY

Company, well, farm name, section and block—	Remarks—
Deep Rock Oil Co. et al's No. 1 Kuykendall, 2,310 ft. from N and E of SW cor. Sec. 24, School Blk. A-46	Cleaning out; total depth 4,648 ft.
Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E Sec. 11, Blk. A-46	Top pay 4,325 ft.; flows every 4 days; temporarily abandoned; total depth 4,454 ft.

BORDEN COUNTY

George Goodrum's No. 2 Conrad, 1,450 ft. from N and 2,500 ft. from E lines, Sec. 55, Blk. 25, H.&T.C. Sur.	Shut down 780 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Shut down 1,935 ft.
E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 3, G.C.&S.F. Sur.	Shut down 1,302 ft.
Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur.	Total depth 2,800 ft.; shut down.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles S of Alpine	Shut down 1,750 ft.

COKE COUNTY

Reed, Hitchens et al's No. 1 Duncan, 1,980 ft. from S and 1,650 ft. from E of Sec. 239, Blk. 2, H.&T.C. Sur. (4,500-ft. cable test)	Shut down 30 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 143, T.&N.O. Sur.	Shut down 267 ft.
Betts & Dennis' No. 1 H. E. Woods, 710 ft. from E and 150 ft. from S Sec. 3, H.E.&W.T. Sur.	Shut down 80 ft.
Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock	Shut down 1,850 ft.

CRANE COUNTY

Cranfill Bros. and Gulf's No. 1 J. B. Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land	Total depth 5,336 ft.; plugging back to shoot.
E. H. Sides and others' No. 1 B. P. Nolen, 150 ft. from S and 150 ft. from W of N 160 acres, Sec. 8, Blk. 31, H.&T.C. Sur.	Straightening crooked hole 170 ft.

CROCKETT COUNTY

Doleman & Moore's No. 1 Perner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur.	Spudded and shut down.

CULBERSON COUNTY

Cranfill Bros. and Sholts' No. 1 Seay, 2,310 ft. from S and W Sec. 45, Blk. 66, Public School Land	Drlg. 2,265 ft.
Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 16, Blk. 79, Public School Land	Shut down 1,280 ft.

(Continued on Page 106)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending May 4

CARSON COUNTY

Company, well, farm name, section and block—	Remarks:
Deep Lake Oil Co.'s No. 1 Keys, NE cor. SW, Sec. 1, Blk. 4, I.&G.N. Sur.	Drlg. 575 ft.
El Paso-Amarillo O. & G. Co.'s No. 1 Champan, 594 ft. S, 1,458 ft. E, Sec. 7, Blk. 3, A.B.&M. Sur.	Location.
Interstate Prod. Co.'s No. 1 Coffee, C S½ NW, Sec. 15, Blk. 4, I.&G.N. Sur.	Drlg. 2,500 ft.
North American O. & G. Co.'s No. 1 Burnett, 1,341 ft. S, 662 ft. E, of S E½, Sec. 80, Blk. 4, I.&G.N. Sur.	Standardizing 2,010 ft.
Red River Gas Co.'s No. 1-A Bennett, 660 ft. N, 660 ft. W, NW, Sec. 2, Blk. 5, B.&B. Sur.	Moving in tools.
The Texas Co.'s No. 1 Schaffer, C SW, Sec. 68, Blk. 4, I.&G.N. Sur.	S.D. 2,300 ft.
The Texas Co.'s No. 1 Bednarz, 317 ft. S, 172 ft. W, S 100 ac. of SW, Sec. 2, Blk. 4, I.&G.N. Sur.	Drlg. 2,260 ft.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands	T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur.	U.R. 535 ft.

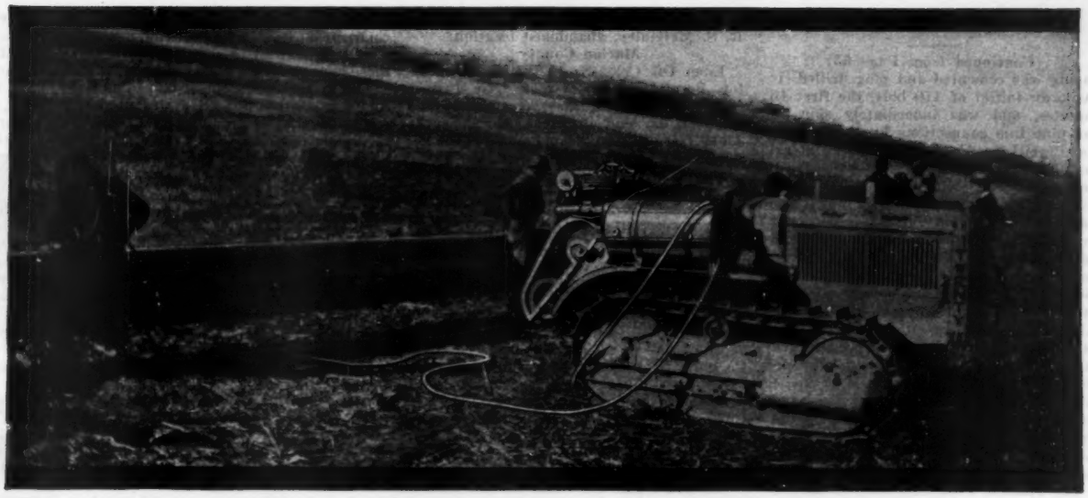
COTTLE COUNTY

Darby Oil Co. and Merry Bros. & Perrin's No. 1 Richards, 330 ft. NE, Sec. 13, B.S.&F. Sur.	S.D. 3,805 ft.

GRAY COUNTY

Anderson et al's No. 2 Vollmert, 330 ft. N and W, SW, Sec. 140, Blk. 3, I.&G.N. Sur.	Rig.
Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 35, H.&G.N. Sur.	Spudded and S.D.
Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur.	S.D. 740 ft.
Cree Hoover & Traham's No. 1 Delmar, 330 ft. S line, 330 ft. W line, NW, Sec. 105, Blk. 3, I.&G.N. Sur.	Rig.
Danciger O. & R. Co.'s No. 1 Barrett, NW cor. S½ NE, Sec. 128, Blk. 3, I.&G.N. Sur.	Coring for csg. point; T.D. 3,060 ft.
Danciger O. & R. Co.'s No. 1-B Barrett, SW cor. N½ NE, Sec. 128, Blk. 3, I.&G.N. Sur.	Drlg. 2,840 ft.
Danciger O. & R. Co.'s No. 1 Barnett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 136, Blk. 3, I.&G.N. Sur.	S.D. 3,097 ft; 5,000,000 ft. gas 3,097 ft.
Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur.	S.D. 2,770 ft; P.B. 2,430 ft. and shot with 80 qts. 2,409-30 ft.
Magnolia Pet. Co.'s No. 1 Barrett, 330 ft. S and E, NE, Sec. 112, Blk. 3, I.&G.N. Sur.	S.O. 3,228 ft; drlg. 3,360 ft.
Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur.	S.D. 2,619 ft.

(Continued on Page 108)



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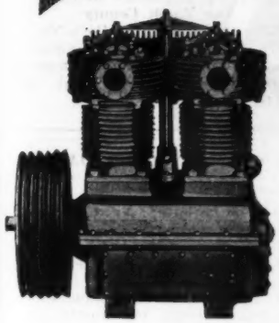

. . . *put* COMPRESSED AIR *to work on your pipe line job . . .*

—cleaning rust and coating off pipe;
—spraying paint or "dope" on pipe;
—drilling rock in trench ahead of ditcher;
—felling trees with air-driven saw;
—drilling blasting holes under stumps;
—grinding pipe ends and rough welds;
—blowing oil furnaces for making pipe bends

Put on your "7 League Boots" and follow this Davey Compressor for a day. See it actually working on such jobs as these illustrated here and dozens of others. This compressor is known for its ability to handle these and similar pipe line jobs faster, better and more thoroughly. On pipe cleaning, for instance, one "Caterpillar"-mounted "Davey" saves $40 to $50 a day over hand labor.

1. Fell trees along right-of-way with air-driven chain saw. (Same tractor then skids trees off to one side of right-of-way.)

2. Operate jack hammers and other percussion tools for removing shale, rock or highway pavement.

3. Use rotary wire brush to clean rust and temporary compounds off pipe before painting.

4. Use cup grinders to smooth pipe cut by torches.

5. Spraying permanent coats of paint on pipe.

FOR HERE AT LAST is the one practical and truly portable air compressor for use on pipe line construction work. This 142 cu. ft. Davey Compressor is an *entirely different* development in compressor design. It weighs only 1000 lbs. complete. "Air-cooling," through the use of aluminum alloys, eliminates all of the useless weight, bulk and unwieldiness associated with water-cooled compressors of similar capacity.

Because of its light weight, it rides *on* the "Caterpillar" or other tractor, instead of being dragged *behind* it, without cluttering up the tractor or crippling its usefulness for drawbar work. It goes wherever the "Caterpillar" can go—over rocky, bumpy ground, up steep grades, across creeks and swamps.

At any point on the job it starts to work with a throw of the clutch and settles down to pumping air with unfailing regularity; it provides an immediate supply of air at usual working pressures wherever you can use air along the line.

The basic principle of Davey air cooling provides fewer parts and stronger parts. Such simplicity of design is your best assurance of dependable operation. Davey Compressors are used and approved by leading pipe line, railroad and general construction contractors.

Inspect the Davey Compressor for yourself and form your own opinion about its usefulness on your job. Mail the coupon, so that we can tell you where you can see one working near you.

DAVEY COMPRESSOR COMPANY, INC. Kent, Ohio

The method of cooling air compressors through the use of metals of high heat conducting quality and capacity, as contained in Davey Compressors, is fully protected by patent

DAVEY AIR COOLED AIR Compressors

DAVEY COMPRESSOR COMPANY, Inc., Kent, Ohio

Tell me where I may see a "Caterpillar"-mounted Davey Compressor on pipe line work near me.

Name_____

Address_____

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O&GJ 5-7-31

EAST CENTRAL TEXAS

(Continued from Page 65)

casing was cemented and plug drilled. It made an initial of 170 bbls. the first 15 minutes, and was immediately shut in for pipe line connections by the Magnolia Pipe Line Co. which has a lateral and gathering lines servicing the field, and connecting with its main 10-inch line at its pumping station in the Groce Survey, Gregg County. There is no doubt in the minds of producers or those who have studied the Joiner and Kilgore areas but that the two pools will be completely connected by producing wells, but there still remains some doubts as to Kilgore and Lathrop Pools connecting, as the Georgetown lime has been logged in some of the wells which form connecting links, and thin sands in these producers lead one to believe the sand may entirely pinch out in some of the wells between the two pools, proving them dry as in the case of tests which have been drilled too far to the east.

The Humble Pipe Line Co. on May 1 connected with the first outside leases in the Kilgore area, Rusk County. These leases belong to the Cordova Union Oil Co.'s lease on the Christian farm in the R. E. Winn Survey, and Hill and others' lease on the Peterson farm in the I. Ruddle Survey.

The Sinclair Oil & Gas Co. completed a 2½-mile southwestern extension to the Joiner Pool on April 27 when its No. 1 Jarvis in the Juan Vargas Survey, Smith County, came in making 230 bbls. per hour through tubing at a total depth of 3,709 feet. The sand was topped at 3,699 feet. This well is south and west of the Demontrand and Guy V. Lewis producers, the latter being the first producer completed in Smith County.

Drilling Unabated

Drilling activities continue unabated in the East Texas areas, and a larger number of wells have been completed, are now drilling and ready to be drilled in the district than have been drilled to date in the Oklahoma City Field, about 300 more than were drilled in the Hendricks Field, Winkler County, Texas, and over 400 more than have been drilled in the Yates Pool, Pecos County, or about the same number as have been drilled in the Yates Pool and in Crane County, which total 778 wells.

COMPLETIONS IN EAST CENTRAL TEXAS

Harrison County

Rowan and Nichol's No. 1 Henry Pitts, location abandoned.

Gregg County

Cranfill & Reynolds' No. 1 G. E. Rembert Co., abandoned location. East Texas Refining Co.'s No. 3 Caddie Fisher, abandoned location. Mammie S. Hammond's No. 1 J. M. Hamby, top Pecan Gap 2,370 feet, base Pecan Gap 3,015 feet, top Georgetown lime 3,674 feet, dry and abandoned, total depth 3,723 feet. Hopkins and others' No. 1 Watson, top sand 3,552 feet, initial production 94 bbls. in 15 minutes on 1-inch casing choke and five-eighths-inch tubing choke, total depth 3,594 feet. Humble Oil & Refining Co.'s No. 2-B S. S. Laird, broken sand 3,525-45 feet, initial production 37 bbls. per hour on eleven-sixteenths-inch choke, total depth 3,661 feet. Hunter & Rowe's No. 1-B Watson, top sand 3,595 feet, initial production 137 bbls. in 25 minutes through three-fourths-inch tubing choke, total depth 3,658 feet. Marlin Oil Syndicate's No. 1 Springhill School, oil sand 3,580-3,621 feet, initial production 204 bbls. in 20 minutes, total depth 3,620 feet. McMillan Petroleum Co.'s No. 1 George Feuton, oil sand 3,584-3,625 feet, initial production 600 bbls. per hour wide open, total depth 3,625 feet. Republic Production Co.'s No. 1 Caddie Fisher, oil sand 3,449-52 feet, initial production 140 bbls. first hour on 1-inch tubing choke, total depth 3,517 feet. Sultan-Daniels and others' No. 1 Springhill Church, oil sand 3,592-3,619 feet, initial production 5.5 bbls. barely cracked, no wide open gauge, total depth 3,620 feet. Vierson's No. 1 Mucklerey, top sand 3,535 feet, initial production 16 bbls. per hour through one-eighth-inch tubing choke, total depth 3,586 feet. Yount Lee Oil Co.'s No. 1-B R. S. McKinley, abandoned location.

Marion County

Eden Oil Co.'s No. 1 J. M. Deware, top Pecan Gap 1,895 feet, base Pecan Gap 2,595 feet, top Georgetown lime 3,254 feet, dry and abandoned, total depth 3,304 feet. E. A. Trammell's No. 1 P. E. Hussie, junked hole, dry and abandoned, total depth 1,884 feet.

Rusk County

Anderson's No. 1 Giles, oil sand 3,680-3,745 feet, initial production 400 bbls. per hour through casing, total depth 3,745 feet. Anderson's No. 2 Thrash, initial production 100 bbls. per hour through tubing, total depth 3,761 feet.

Beard-Hammond's No. 1 J. S. Bean, top sand 3,615 feet, no gauge taken, total depth 3,706 feet. British-American Oil Co.'s No. 4 Emma Thompson, top sand 3,670 feet, initial production 148 bbls. first hour open, total depth 3,732 feet. Burton Drilling Co.'s No. 4 Thompson, top sand 3,627 feet, initial production 95 bbls. per hour through three-fourths-inch tubing choke, total depth 3,633 feet.

Cordova Union Oil Corp.'s No. 5 C. O. Christian, top sand 3,658 feet, no gauge taken, total depth 3,708 feet. Cordova Union Oil Corp.'s No. 6 C. O. Christian, top sand 3,622 feet, initial production 82 bbls. through eleven-sixteenths-inch tubing choke, total depth 3,700 feet.

Danciger Oil & Refining Co.'s No. 1 Carlos Bean, top sand 3,605 feet, initial production estimated 18,000 bbls. daily, total depth 3,685 feet. Danciger Oil & Refining Co.'s No. 2 Carlos Bean, top sand 3,601 feet, initial production 420 bbls. in 45 minutes open, total depth 3,677 feet. Danciger Oil & Refining Co.'s No. 3 Carlos Bean, top sand 3,607 feet, initial production 600 bbls. open, total depth 3,699 feet.

East Texas Refining Co.'s No. 1 Wills, top sand 3,688 feet, initial production 560 bbls. per hour through casing and tubing open, total depth 3,692 feet. Elliott's No. 1 Deason, oil sand 3,613-23 feet, initial production 50 bbls. per hour through tubing, total depth 3,644 feet.

Federated Oil Corp.'s No. 3 Camp, oil sand 3,643-59 feet, initial production 65 bbls. per hour through casing, total depth 3,659 feet. Fitzsimmon's No. 1 Alford, sand 3,599-3,608-18-19-40-42-48-50 feet, initial production 400 bbls. in 24 hours, total depth 3,718 feet.

Gulf Production Co.'s No. 2 Brightwell, top sand 3,652 feet, initial production 60 bbls. per hour through two three-quarter inch tubing chokes, total depth 3,695 feet. Gulf Coast Oil Co.'s No. 1 Giles, oil sand 3,701-04 feet, initial production 3,000 bbls. in 24 hours, total depth 3,759 feet. Gulf Production Co.'s No. 4 Rosa May Griffin, top sand 3,564 feet, initial production 180 bbls. per hour through two three-quarter inch tubing chokes, total depth 3,655 feet. Same company's No. 6 Rosa May Griffin, top sand 3,556 feet, initial production 320 bbls. per hour through three-quarter inch tubing choke, total depth 3,657 feet. Same company's No. 1 Hindman, top sand 3,693 feet, initial production 102 bbls. per hour through three-quarter inch tubing choke, total depth 3,737 feet. Gulf Production Co. and Devonian's No. 1 W. L. Laird, top sand 3,605 feet, initial production 170 bbls. per hour through two three-quarter inch tubing chokes, total depth 3,677 feet. Same companies' No. 2 W. L. Laird, top sand 3,601 feet, initial production 180 bbls. per hour through two three-quarter inch tubing chokes, total depth 3,675 feet. Gulf Production Co. and Smith's No. 3 J. N. Peterson, top sand 3,615 feet, initial production 124 bbls. per hour through two three-quarter inch tubing chokes, total depth 3,649 feet. Same companies' No. 5 Peterson, top sand 3,631 feet, initial production 120 bbls. per hour through three-quarter inch tubing chokes, total depth 3,690 feet.

Houston Oil Co.'s No. 1-B Carlos Bean, top sand 3,629 feet, initial production estimated for 7,000 bbls. daily, total depth 3,654 feet. Same company's No. 2 Brightwell, top sand 3,659 feet, initial production 124 bbls. per hour through 1-inch casing and tubing chokes, total depth 3,679 feet. Humble Oil & Refining Co.'s No. 17 Crim, top sand 3,595 feet, initial production 260 bbls. first three hours through eleven-sixteenths inch tubing choke, total depth 3,630 feet. Same company's No. 19 L. D. Crim, top sand 3,602 feet, initial production 285 bbls. in three hours through eleven-sixteenths inch tubing choke, total depth 3,625 feet. Same company's No. 3-A S. S. Laird, top sand 3,585 feet, initial production 313 bbls. in three hours through eleven-sixteenths inch tubing choke, total depth 3,674 feet. Same company's No. 4-A S. S. Laird, top sand 3,595 feet, initial production 63 bbls. first hour through eleven-sixteenths-inch tubing choke, total depth 3,688 feet. N. W. Hunter's No. 1 Buntyn, top sand 3,704 feet, initial production 350 bbls. per hour through 2½-inch tubing open, total depth 3,755 feet. N. W. Hunter's No. 2 Buntyn, top sand 3,642 feet, initial production 742 bbls. first hour through tubing open, total depth 3,701 feet.

E. M. Jones' No. 2-A J. N. Peterson, top sand 3,660 feet, initial production 90 bbls. per hour through five-eighths inch tubing choke, total depth 3,760 feet. Jones' No. 1 S. B. Wills, top sand 3,674 feet, initial production 102 bbls. per hour through eleven-sixteenths inch tubing choke, total depth 3,676 feet. E. M. Jones' No. 2 S. B. Wills, top sand 3,586 feet, initial production 102 bbls. per hour through eleven-sixteenths inch tubing choke, total depth 3,595 feet.

K. & P. Oil Co.'s No. 1 Emma Price, top sand 3,645 feet, initial production 1,000 bbls in seven hours through forty two one-hundredths inch tubing choke, total depth 3,720 feet.

Lewis Oil Co.'s No. 1 Wills, top sand 3,681 feet, initial production 642 bbls. first hour through casing and tubing open, total depth 3,683 feet.

John Mabee's No. 1 W. P. Brett, oil sand 3,706-48 feet, initial production 150 bbls. per hour through tubing, total depth 3,748 feet. Magnolia Petroleum Co.'s No. 3 B. F. Laird, top sand 3,573 feet, initial production 73 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,591 feet. Markham and Dunning's No. 3 J. N. Peterson, top sand 3,622 feet, initial production 491 bbls. per hour through casing and tubing, total depth 3,673 feet. McMann's No. 2 Finney, sand 3,617-45 feet, initial production 1,148 bbls. in 24 hours, total depth 3,645 feet. McMann's No. 1 S. S. Laird, top sand 3,642 feet, initial production 1,020 bbls. in five hours through tubing open, total depth 3,662 feet. Merrick's (Gibson & Johnson) No. 1 Ashby, top sand 3,648 feet, initial production 1,734 bbls. in 24 hours, total depth 3,725 feet. Merrick and others' No. 1 Cooper, top sand 3,579 feet, initial production 1,500 bbls. daily, total depth 3,682 feet.

Navarro Oil Co.'s No. 2 Brightwell, top sand 3,591 feet, initial production 128 bbls. hourly through open tubing, total depth 3,689 feet. Navarro Oil Co.'s No. 1 J. N. Peterson, top sand 3,670 feet, initial production 766 bbls. hourly through eleven-sixteenths-inch choke on tubing, total depth 3,750 feet.

Oliver and Brown Drilling Co.'s No. 1 B. F. Hindman, top sand 3,606 feet, initial production 135 bbls. hour through 1¼-inch choke on tubing, total depth 3,620 feet.

Petroleum Marketing Co.'s No. 2 Deason, top sand 3,652 feet, initial production 425 bbls. the first hour and 25 minutes through casing, total depth 3,727 feet.

Stanolind Oil & Gas Co.'s No. 3 Ben Laird, top sand 3,652 feet, initial production 74 bbls. hour through eleven-sixteenths-inch choke on tubing, total depth 3,770 feet. Stanolind Oil & Gas Co.'s No. 4 Ben Laird, top sand 3,629 feet, initial production 79 bbls. through eleven-sixteenths-inch choke, total depth 3,744 feet. Sun Oil Co.'s No. 1 S. A. Selman, top sand 3,672 feet, initial production 13,500 bbls. average on 45-minute test, total depth 3,737 feet. Sun Oil Co.'s No. 1 W. D. Tucker, abandoned location.

Turman Oil Co.'s No. A-1 Brightwell, top sand 3,640 feet, initial production 900 bbls. through casing and tubing, total depth 3,723 feet. Turman's No. B-2 W. P. Brightwell, top sand 3,620 feet, initial production 300 bbls. per hour open, total depth 3,691 feet.

Ward Oil Co.'s No. 1 Cox, top sand 3,670 feet, initial production 60 bbls. hourly through tubing, total depth 3,732 feet. Ward and others' No. 1 H. P. Leverett, top sand 3,670 feet, initial production 260 bbls. in 15 minutes through casing and tubing open, total depth 3,700 feet. Williams and Dunning's No. 1 C. Young, top sand 3,639 feet, initial production 40 bbls. hourly through one-sixteenths-inch choke on tubing, total depth 3,726 feet.

Smith County

Howard Petroleum Co.'s No. 1 Lee Holt, salt water sand from 3,924-44 feet, total depth 4,050 feet, dry and abandoned. Guy Lewis' No. 1 R. Wright, abandoned location. Sinclair Oil & Gas Co.'s No. 1 A. S. Jarvis, top sand 3,699 feet, initial production 230 bbls. hourly through tubing, total depth 3,709 feet. Sun Oil Co.'s No. 1 J. Henson, in Juan Vargas Survey, abandoned location.

Van Zandt County

Humble Oil & Refining Co.'s No. 1 C. L. York, top pay 2,589 feet, initial production 117 bbls. first hour through eleven-sixteenths-inch choke, total depth 2,921 feet.

OIL MAN'S CALENDAR

MAY

4-9 — Charlotte, N. C., Good Roads Convention.

6-7—Indianapolis, Ind., Indiana Petroleum Association, Severn Hotel.

11-12—Dallas, Tex., Annual Convention, National Oil Scouts' Association.

11-14—Memphis, Tenn., Natural Gas Department, American Gas Association.

14-15—New Orleans, La., American Oil Chemists Society.

14-16—Washington, D. C., American Road Builders Association.

19-21 — Tulsa, Okla., Natural Gasoline Association of America, Mayo Hotel.

27-29—New York, National Foreign Trade Council.

28—Warren, Pa., National Petroleum Association, Fire and Safety Marshals.

JUNE

2-5—Washington, D. C., 24th National Conference on Weights and Measures, Bureau of Standards.

3-4—A.P.I. Division of Production, Baker Hotel, Dallas, Tex.

5—Fort Worth, Tex., A.P.I. Board of Directors, Texas Hotel.

8-11—Toronto, Canada, National Association of Purchasing Agents, Royal York Hotel.

10-12—Swampscott, Mass., American Institute of Chemical Engineers.

15-18—Madison, Wis., fourth annual oil and gas power meeting, American Society of Mechanical Engineers.

15-19—White Sulphur Springs, W. Va., Summer Meeting, Society of Automotive Engineers.

22-26—Chicago, Annual Meeting, American Society for Testing Materials.

SEPTEMBER

1-3—Cleveland, Ohio, 20th National Aeronautic Meeting, Society of Automotive Engineers.

16-18—Atlantic City, N. J., Annual Meeting, National Petroleum Association, Hotel Traymore.

OCTOBER

2-3—Houston, Tex., Petroleum Division, American Institute of Mining and Metallurgical Engineers.

12-16—Chicago, National Safety Council.

NOVEMBER

10-12—Chicago, Twelfth Annual Meeting, American Petroleum Institute, Stevens Hotel.

16-21—Pittsburgh, Pa., Third International Conference on Bituminous Coal, Carnegie Institute.

DECEMBER

28-31—Tulsa, Geological Society of America, Mayo Hotel.

JACKSON

ANNOUNCING

THE COMPLETE DESIGN, MANUFACTURE and INSTALLATION OF H_2S REMOVAL PLANTS

UNDER AGREEMENT WITH THE
GIRDLER CORPORATION, Inc., Louisville, Ky.

The Girdler Absorption Process* economically removes H_2S from gaseous mixtures.

The process is particularly applicable to the purification of gases of high H_2S content under pressure, such as NATURAL GAS and REFINERY VAPORS.

Ethanolamine used as absorbent—non-inflammable, highly absorbent and long lived, non-corrosive to ferrous metals.

The process is offered under guarantee based upon months of successful operation.

Quotations furnisned upon advice of gas quantity, pressure and an analysis of the gas . . .

*The Girdler Process, covering the use of Ethanolamine and other reagents for the removal of H_2S is both broadly and specifically protected by U. S. Letters Patent No. 1,783,901 and other U. S. and foreign letters patent, both allowed and pending, owned solely by the Girdler Corp. and licensed to the Jackson Engineering Corp. Tulsa, for manufacture and sublicense.

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Compact Design at Denver Refinery

New Plant of Continental Company Combines Skimming, Cracking and Other Features in One Unit. Completely Electrified

By J. E. Fenex
Plant Superintendent, Continental Oil Co.

The Continental Oil Co.'s new refinery located near Denver, Colo., is a combination skimming and Cross cracking unit designed jointly by the Continental Oil Co. engineers and the M. W. Kellogg Co. The battery limit including the distillation and cracking equipment was constructed by the M. W. Kellogg Co.

Built exclusively of new equipment, the Continental has been able to incorporate the latest developments in refinery design in building the new plant. Most of these developments have been used at one or more of the other 10 Continental refineries, so that the plant might be said to represent the perfections of other operations applicable to a manufacturing unit of the size and type required for this market.

For the last 50 years the Continental Oil Co. has been the largest distributor of petroleum products in Denver and in the State. The Florence, Colo., refinery No. 5 has for the last 50 years or more furnished part of the required petroleum products.

Many factors were considered before the Denver refinery was built, such as market, crude oil supply, freight rates, labor, etc., all of which were ideal. The study with our past experience revealed that high antiknock quality gasoline could be made at a relatively low cost in a very compact skimming and cracking plant. The plant cost per barrel throughput is much less than the cost on the older types of refineries. This new unit occupies a space of approximately 85'x128'. This includes the crude distillation and cracking equipment, the office, boiler room, control room, laboratory, gas absorption plant, condensers, and all other equipment directly connected with the operation of the unit. The superintendent can see the operation of the boiler room, control room and laboratory at all times through the wire inserted clear glass panels of his office.

BUILDING A NEW REFINERY

The Denver refinery of the Continental Oil Co., described in this article, is an example of the compactness and efficiency obtainable in construction and operation when a new plant is built. The refinery, which started operating the first of the year, has a crude oil capacity of 2,000 bbls. daily with sufficient cracking capacity to handle the cracking stock available.

The distillation unit, office, boiler room, absorption unit and other equipment directly connected with the operation of the unit occupy a space 85x128 feet. A few years ago a refinery of similar capacity would have been spread out over a large area with several operating units.

The plant is almost completely electrified and has many other features which are of interest to refinery operators.

Foreseeing possible expansion, this refinery is located on a plot of land consisting of 107 acres about 5 miles from the heart of Denver on the Brighton Boulevard. The present unit with its tankage is so arranged that other similar units may be added from time to time as required, maintaining present compactness and ease of operation.

Eight modern four-room cottages with garages were erected for plant employes. These as well as all plant buildings are of brick, concrete and steel construction.

Crude Supply

All crude oil is shipped in by tank car a distance of approximately 65 miles from the Wellington and Fort Morgan Fields. The Wellington Field, located near Fort Collins, Colo., is owned and operated by the Continental Oil Co., while the crude from Fort Morgan sometimes called "Orchard" crude is purchased. Crude is transported into the refinery over the Union Pacific and Burlington Railroads. The unit is designed to operate also on a mixture of the above crude with light Rattlesnake crude from near Farmington, N. Mex. The Colorado crudes now being processed are of the mixed base type of about 33° A.P.I. gravity and do not present any particularly difficult refining problem.

Distillation Equipment

The combination skimming and cracking unit was designed to process 1,660 bbls. of crude oil daily; however, tests indicate that it will be possible to process 2,000 bbls. daily.

The furnace is the Kellogg type radiant heat furnace and contains a total of 157 tubes. These tubes are divided into two compartments—the cracking section and the reboiler section. Fourteen tubes are installed along the face of the bridge wall, 18 tubes on the outside wall, 45 tubes comprising two rows in the roof for absorption of radiant heat and 80 tubes in a vertical bank behind the bridge wall for convection service.

Eight tubes comprising the two top rows or shield section of the convection bank, the bridge and side wall tubes, the roof tubes and six rows or 24 tubes of the convection section immediately below the eight shield tubes are all used for cracking.

Forty-eight tubes in the convection bank are used for a reboiler section.

The furnace is fired from both ends of the combustion chamber with Coen combination gas and oil burners. The stack is steel self-supporting, 5 feet diameter by 145 feet high and is brick lined for the entire height. A mark near the top of the stack indicates an altitude of 1 mile above sea level.

Towers

The size and construction of the towers are shown on the accompanying flow chart. There is an evaporator tower 8'x47'8" containing four bubble decks and three disc and doughnut baffles. In the top of the tower above the bubble trays is a pancake pipe coil for preheating the crude before it enters the flash tower. Beneath the coil and immediately above the bubble trays is a total drawoff pan which collects gas oil being condensed which is back trapped through a line to the base of the pressure tower for charging stock to the cracking portion of the furnace.

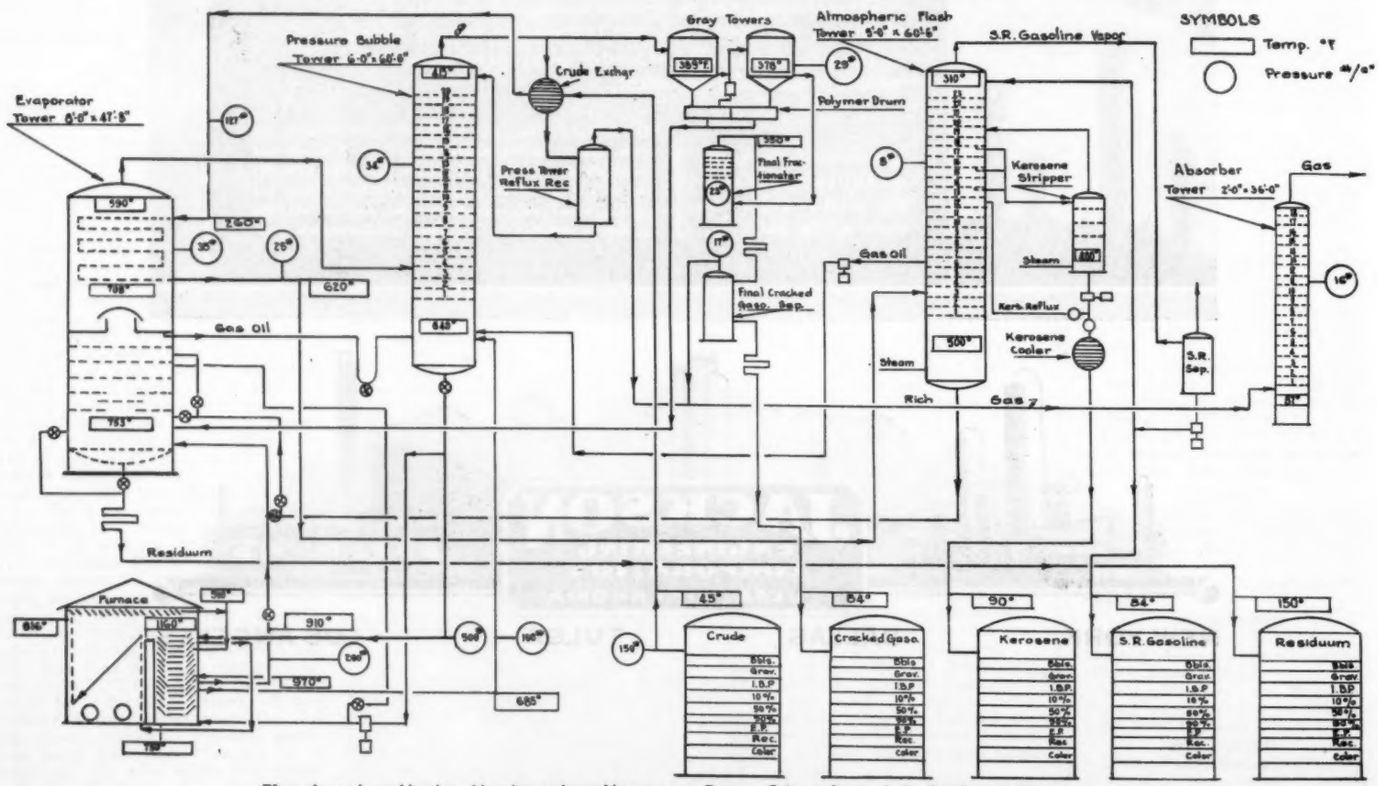
The kerosene stripper tower, 2'x10', contains three bubble decks.

Two Gray towers in series, 9'x13', have a clay capacity of 14 tons each. Each tower is equipped with a 250-pound air hoist for hoisting clay.

The final cracked gasoline fractionating tower, 4'x20', contains five bubble trays. The gas absorber tower, 2'x36', contains 18 bubble trays.

Operation

The accompanying flow diagram shows



Flow chart of combination skimming and cracking unit at Denver, Colo., refinery of the Continental Oil Co.

operating temperature and pressure at the various points throughout the equipment. Yields of the various stocks for an eight-day operation are given later. When required the unit should operate for 20 days or more before being taken off stream for normal cleanout.

Crude from storage is charged to the unit by means of a Pacific type centrifugal pump at 150 pounds pressure, governed by a Foxboro flow controller. Crude is first discharged through the partial condenser on the cracked gasoline vapor line from the pressure bubble tower, then through the internal coil located in the top of the evaporator. It then enters the flash tower where the gasoline and kerosene fractions are removed. Provision is made for reflux at two points in the tower, kerosene at the twelfth deck and gasoline at the top. The gasoline reflux is controlled by a Foxboro temperature controller and the kerosene by hand.

Gasoline vapors leaving the tower pass through a condenser, then the water and reflux separator to storage. Kerosene is withdrawn from the fourteenth, sixteenth and eighteenth decks of the flash tower and flows by gravity to a stripper drum. Vapors from this drum are vented back to the top of the flesh tower. Kerosene from the bottom of the drum flows by gravity to a centrifugal pump which delivers part of it back to the flash tower top. The other stream of vapor passes in series through two Gray towers, then to the after bubble tower for final fractionation. The polymers from the Gray towers and after bubble tower are trapped into the polymer accumulator and are automatically discharged by rotary pumps into the base of the evaporator.

Gasoline vapors from the final fractionator pass through a condenser, then into a water separator and reflux drum, then through an additional cooling coil to storage. Gases vented from the top of the cracked gasoline reflux separator and the final cracked gasoline separator are delivered to an absorber tower for recovery of butane and heavier hydrocarbons.

From the bottom of the pressure bubble tower two suction streams are taken. One by the seven stage motor driven Pacific centrifugal pump discharging through the cracking portion of the furnace against an outlet pressure of 300 pounds at a cold volume rate of 3,000 to 3,500 bbls. per day. Another suction stream is taken by a Pacific centrifugal pump and discharged through the reboiler section of the furnace and back into the pressure tower. No pressure beyond that required to circulate is maintained on the coil. This stream is for reboiling the tower bottom to completely strip all gasoline. The rate of flow from the two above pumps is governed by manual operation of remote controlled valves on the discharge, with the control mounted on the instrument board.

View of pump house at Denver refinery.

as reflux and the remainder through a cooler to storage.

Suction is taken on the topped crude from the base of the flash tower by a Byron Jackson centrifugal pump and discharged to either of two points, over the second bubble plate of the evaporator or into the base of the evaporator.

The delivery nozzle on the evaporator from the cracking coil is installed tangentially 2 feet above the bottom of the evaporator. This is to keep oil moving in the base of the evaporator to prevent the formation or precipitation of coke. Provision is made to reflux either gas oil or heavy fuel oil into the evaporator to control the temperature in the base of the evaporator. Fuel oil is withdrawn from the base of the evaporator and forced through a cooling coil to storage by plant pressure.

Vapors from the furnace together with those distilled from the topped crude pass upward through baffles and bubble plates, finally coming into contact with the crude oil heater coil in the top of the evaporator. All gas oil condensed by contact with the crude oil coil is trapped on the total drawoff pan and delivered to the pressure tower by means of the back trap line. Those vapors not condensing pass out of the top of the evaporator through the vapor line and enter the pressure tower above the third bubble plate.

Vapors from the top of the pressure tower are divided into two streams. One stream passes through the partial condenser against cold crude, then through a cooling coil, and then to a separator for use as reflux for the pressure tower

Charge and yield from the unit on an eight-day run were as follows:

	Bbls.	Pct.
Crude charged	13,481	100.00
Yields—		
Crude gasoline	4,437	32.90
Pressure gasoline	4,062	30.20
Kerosene	356	2.64
Rerun slop	215	1.60
Heavy fuel oil	3,757	27.90
Gas and loss	654	4.85

The pressure gasoline produced after passing through the Gray towers has a Saybolt color of 30 plus and a very low gum content by both copper dish and oxygen bomb tests. The 410° F. endpoint product has a better lead tetraethyl rating than the Ethyl Corp. standard Ethyl Gasoline.

Fuel oil produced meets bunker C specifications.

Treating

The treating plant consists of one 1,200-bbl. agitator for sweetening gasoline. Both pressure and straightrun gasoline are easily sweetened with 14° gravity doctor solution by the ordinary batch circulating sweetening process. No sulphur is required in sweetening straightrun gasoline or kerosene.

One 200-bbl. lead lined agitator is provided for kerosene treating but it is possible that the kerosene produced will not require acid treatment.

Boiler House

The boiler is a 125 horsepower Sterling type Babcock and Wilcox, which is operated at 50 pounds pressure. Since the plant is practically 100 per cent electrically operated it is necessary to generate only sufficient steam for heating and processing purposes. The only steam pump in continuous operation in the entire plant is the boiler feed water pump.

Fire Fighting Equipment

The plant is equipped with a complete Foamite system piped underground to all light oil tanks and agitators. From the roof of the Foamite generator room is suspended a two-compartment powder hopper that has a total capacity of 10,000 pounds of powder. In one compartment is 5,000 pounds of "A" powder, and in the other compartment is 5,000 pounds of "B" powder. Beneath the hopper are located two stationary generators directly connected to the water system for the two-foam solution. These generators discharge into separate lines leading to the mixing heads which are located on tank tops and to stationary hose reels strategically placed about the plant.

In addition to the Foamite system a 6-inch fire and service water system encircles the plant, with 18 water hydrants.

The first pump located in the water pump house is a four-stage Dean type centrifugal, driven by a 145 horsepower Sterling petrol gasoline engine, which is capable of pumping 1,000 gallons per minute at 140 pounds pressure. By means of a remote control system this pump can be started or stopped from the superintendent's office.

Marketing Facilities

A large percentage of the plant output will be delivered to Denver and the vicinity by Truck Train trucks. An all concrete Truck Train loading rack is provided. The plant is also equipped with a 400-foot all steel rack for loading tank cars.

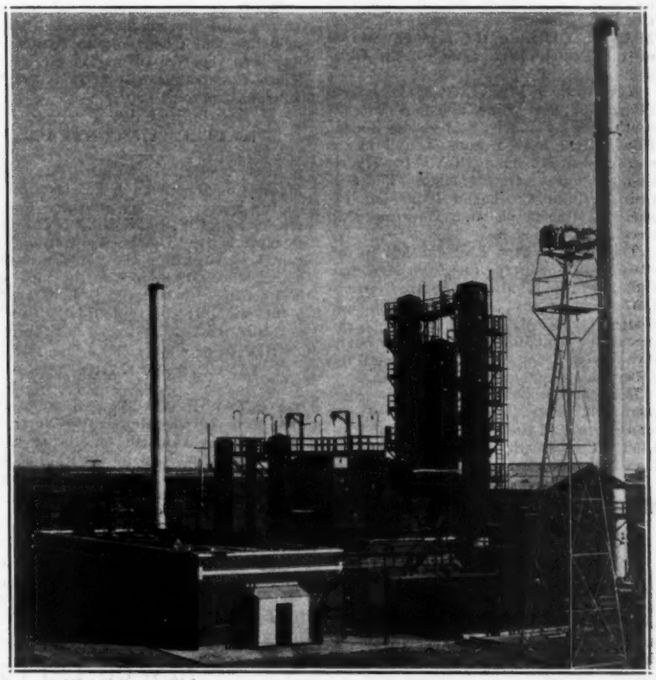
Centrifugal pumps for loading have a capacity of 500 gallons per minute. The marketing department has erected an up-to-date filling station in front of the refinery on the Denver Brighton Highway.

Plant Lighting

Plant lighting is obtained by means of a flood light system totalling 18,000,000 candle power. The 11 flood lights are mounted on three steel windmill towers 50 feet high.

Plant Personnel

The unit is so designed and constructed that only two men per shift are required to operate the distillation unit and boiler. During normal operation the plant will employ a minimum of 14 men, or a maximum of 16 men.



Distillation unit at Continental Oil Co.'s Denver refinery showing compact design. One of flood light towers in right foreground. Top of stack slightly more than 1 mile above sea level.

MONTANA-DAKOTA CO. EXTENDING ITS SYSTEM

R. M. Heskett, vice president of the Minnesota-Northern Power Co., announces acquisition from the Continental Public Utilities Corp. of a half interest in the Minot, (N. Dak.) Gas Co., which supplies that town with manufactured gas.

The acquired company will be operated by the Montana-Dakota Power Co., subsidiary to the Minnesota-Northern; immediate steps will be taken to convert the manufactured gas plant and equipment for natural gas which will be piped 110 miles from Williston, N. Dak., at present the northern terminus of the power company's lines in North Dakota.

"The acquisition of Minot Gas Co. and the extension of our natural gas lines from Williston is an important step in our program," said Mr. Heskett. "The towns between Williston and Minot are so situated that at least 10 of them will be supplied with natural gas for both industrial and domestic uses. Work on surveys and right of way will start immediately and we expect to have natural gas ready for distribution in Minot in the fall of 1932."

Gas for both the Bismarck and Minot lines is supplied from the Baker Field in eastern Montana which supplies gas to the Black Hills district in South Dakota and towns in eastern Montana.

This extension of Minnesota-Northern Power system gas lines will give the company a total of 1,115 miles of natural gas lines in North and South Dakota, Montana and Wyoming. Subsidiary companies of the Minnesota-Northern Power Co. control the major portion of the natural gas available in the Baker and Kevin-Sunburst Fields in Montana.

A.P.I. DIRECTORS TO MEET

The next meeting of the board of directors of the American Petroleum Institute will be held Friday, June 5, in the Texas Hotel at Fort Worth, Tex. The session will follow the close the previous day of the first mid-year meeting of the Institute's Division of Production in the Baker Hotel at Dallas, Tex.

Pipe Line Construction News

Sinclair Contracts Give Access to Gulf And Coffeyville, Kans.

Contracts awarded during the past week by the Sinclair Pipe Line Co. for two lines, one in Texas and the other in Oklahoma, will, when the lines are completed, give the Sinclair companies pipe line facilities from East Texas and Oklahoma City to Coffeyville, Kans., and the Gulf. The Fredell Construction Co. of Amarillo and Denver, was awarded the contract for building 88 miles of 12-inch line from East Texas to connect at College Station (Mexia), Tex., with the Pure Oil Pipe Line Co., a subsidiary of the Prairie Pipe Line Co. Meador and Whittaker, of Burkburnett, Tex., were awarded the contract for the construction of 13 miles of 12-inch line from McCloud, Okla., to the Konova Station of the Prairie Pipe Line Co. in Oklahoma.

The Prairie Pipe Line Co.'s system (Pure Oil Pipe Line division) extends south from Colonels Station to Smiths Bluff, Tex., near Beaumont and has a station at Huffman, Tex., in Harris County, not far from Houston. The Sinclair Refining Co. has a 40,000-bbl. capacity refinery on the Houston ship channel near Houston.

The Sinclair Pipe Line Co. has in operation a 12-inch pipe line from McCloud, Okla., which is at Oklahoma City, to Coffeyville, Kans., where the Sinclair company has a 12,000-bbl. refinery. The new line from McCloud to Konova will give a connection with the Prairie Pipe Line Co.'s system north and south.

It seems probable the Sinclair company will construct a line from the Huffman Station of the Prairie-Pure Oil Pipe Line Co. to the Sinclair refinery on the Houston ship channel.

MONTERREY LINE MAY BE EXTENDED 250 MILES

An extension of United Gas Co.'s line from Monterrey to Saltillo, Mexico, thence to Torreon, approximately 250 miles, will be constructed if negotiations for franchises and government concessions are successful. The gas which the company is furnishing domestic and industrial consumers of Monterrey comes from the border fields of Texas in the Laredo district.

Some gas has been discovered recently in the Aldamas district of Mexico, situated just south of the fields on the other side of the Rio Grande, and if found in sufficient quantity the fuel will be obtained from the new source of supply.

ATLAS COMPLETES LINE

SHREVEPORT, La., May 4.—The Atlas Pipe Line Co., Inc., announces completion of its 8-inch trunk line from the East Texas fields to Shreveport, La. The line is 57 miles long, running from the company's loading rack and tank farm 2 miles south of Longview to the plant of the Spartan Refining Co. at Jewella, near Shreveport. The trunk line has a maximum capacity of 25,000 bbls. daily and was built at a cost of approximately $1,000,000. In addition to the main trunk line, the company is also finishing 31 miles of gathering lines extending into the three pools of the East Texas Field, Joiner, Kilgore and Lathrop.

What is said to be record time was established by the Atlas Pipe Line Co. in building this new line, only 16 working days having been required for its construction. The work was under direction of H. M. Arthur, pipe line superintendent of the company.

WILL LAY 20-INCH GAS LINE TO SYRACUSE AREA

NEW YORK, May 5.—The Lycoming Gas Co., subsidiary of the Standard Oil Co. (New Jersey), has completed its survey for a 110-mile 20-inch natural gas pipe line from a point near Tioga, Pa., to Syracuse, N. Y.

Construction will be started within the next month and the line is expected to be in operation within six months.

Considerable industrial business has been booked by the Lycoming company in the Syracuse area, and it is unofficially reported that the Syracuse Lighting Co., subsidiary of the Niagara Hudson Power Corp., will market natural gas blended with the manufactured product for domestic consumption in the Syracuse area.

While the announcement of the company's pipe line plans indicate that the new line will reach only to Syracuse, it has been reported in market circles that Tioga County gas may later reach New England markets.

KETTLEMAN CONTRACT

LOS ANGELES, Calif., May 2.—Macco Construction Co. has been awarded the contract to lay the pipe line extensions in Kettleman Hills by the Kettleman North Dome Association. The contract covering the labor involves about $30,000. Orders for the pipe have been placed with coast and eastern plants and involve approximately an expenditure of $420,000.

LINE TO MENARD, TEX.

FORT WORTH, Tex., May 4.—Pipe has been purchased by the Northwest Texas Gas Co. which will bring gas 9 miles from the land of the Callan City Co. to Menard, Tex. The Northwest Texas Gas Co. has the franchise.

DUMAS-BOISE CITY CONTRACT

The Panhandle Power & Light Co., Borger, Tex., is letting contracts this week for 75 miles of 6-inch gas line from Dumas, Tex., to Boise City, Okla.

READY TO LAY LINE FROM DUNDEE FIELD

CORNING, N. Y., May 1—A touch of finality was added today to the pictures of the Wayne gas development field with the announcement that employes of Rich & Co., of Bradford, Pa., were about to begin laying the 6 or 8-inch line from the Belmont wells in the western edge of the Dundee Field to the center of the Wayne Field.

With the survey completed on the line, beginning from a point where the present Dundee Field line strikes the western edge of the field, and rights of way obtained, the pipe will immediately be started at this point to run westward to the Wayne Field. Some of the pipe is already on its way and more will arrive within a short time. The Belmont Quadrangle Co. has one well going down in the Wayne Field at the present time, and owns about 20 producers in the Dundee Field. Gas for its line will come from its own wells to be drilled in the Wayne Field, and by purchase from other companies now owning producers.

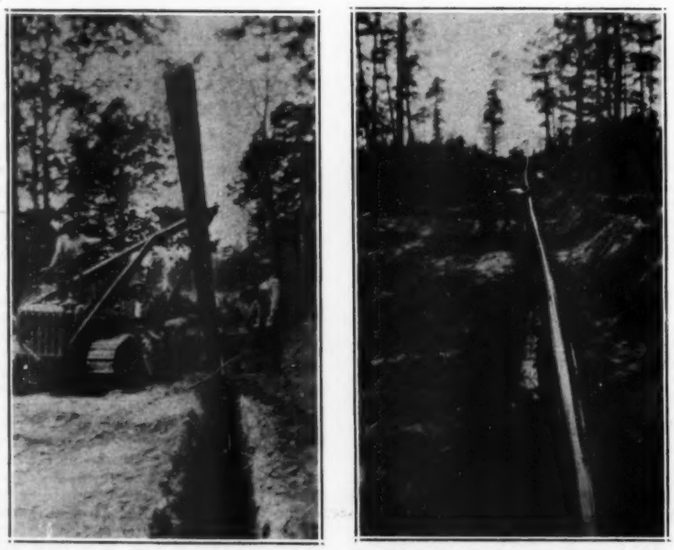
WELDING CONTRACTS

The Welding Engineering Co. of Bartlesville, Okla., has been awarded contracts for electric welding 100 miles of 18-inch and 20-inch pipe for the Columbia Gas Construction Co. in Indiana; and for 190 miles of 20-inch and 22-inch pipe for the Missouri-Kansas Pipe Line Co. in Illinois, the general contractors on this line being Williams Brothers, Inc., of Tulsa. The Welding Engineering Co. has also completed the electric welding of approximately 600 miles of 24-inch pipe for the Continental Construction Corp.

14 MILES OF 6-INCH

DUNDEE, N. Y., May 1—It is learned from reliable sources that the Lamoka Power Co. will sell its gas produced in this field to the Associated Gas & Electric Co. and that it has ordered pipe for a 6-inch line 14 miles in length to Penn Yan where it will tie into the Associated system.

NEW OUTLET FOR EAST TEXAS CRUDE



Laying the 8-inch line of the Arkansas Pipe Line Corp. from Shreveport, La., to the East Texas fields.

RUN EAST TEXAS OIL THROUGH ARKANSAS LINE

SHREVEPORT, La., May 4.—Oil from the East Texas fields was pumped through the 8-inch pipe line of the Arkansas Pipe Line Corp., a unit of the Arkansas Natural Gas Corp., Saturday, May 2.

Operating under 800 pounds working pressure, the initial capacity of the system is 12,525 bbls. daily. A second unit of pumping equipment will be installed within the next few days, thereby increasing the flow to more than 25,000 bbls.

Since production began on the leases of the Arkansas Fuel Oil Co., another unit of the Arkansas Natural Gas Corp., oil has been transported to a 48-car loading rack on the Texas & Pacific Railroad at Willow Springs, Tex. For some time 24,000 bbls. daily has been shipped to Shreveport and Plaquemine, La., where it has been loaded on Cities Service Co. tankers bound for Cities Service refineries on the Atlantic Seaboard.

Included in the pipe line construction job were a pumping station and booster station. The Caster pump station, named in honor of Judge H. O. Caster of Cities Service Co., is situated on the Hamilton McNutt Survey just northwest of Longview. The first of two 250 horsepower Bruce-McBeth gas engines, connected directly to two 6"x24" Prescott plunger-type pumps, has been installed. The other will be in place within two or three days, officials of the Arkansas Pipe Line Corp. said. A midway booster station has been erected 3 miles northeast of Scottsville, Tex. Orders for material were placed April 22, work began April 27 and the station was completed May 1, thus establishing what is considered a record for this type of construction.

One of the two 55,000-bbl. storage tanks has been completed, and the other will be finished within the next few days. Fifteen miles of main gathering lines have been completed. Twenty additional miles will connect leases of the Arkansas Fuel Oil Co. and the Louisiana Oil Refining Corp. in the Longview and Kilgore areas with the Caster pump station.

Employing more than 500 men, Ford, Bacon & Davis Construction Corp. constructed the 8-inch main line from Longview to Shreveport, a distance of approximately 70 miles. The job was in charge of W. S. Bibb. Gordan L. Gano is in active charge of the Arkansas Pipe Line Corp.

CONTRACT FOR 110-MILE KANSAS-MISSOURI LINE

The Western Service Corp., Butler, Mo., has let a contract for 110 miles of main line to the C. L. Berger Construction Co., Oklahoma City, Okla. This line will consist of 53 miles of 8-inch line and 57 miles of 4-inch and will supply gas to seven communities running from Trading Post, Kans., to Butler, Mo., and from Butler to Deepwater, from Deepwater to El Dorado Springs.

STEEL PIPE SHIPMENT

GALLIPOLIS, Ohio, May 4.—A cargo of steel pipe from Pittsburgh, Pa., on 16 barges and weighing 14,000 tons was en route down the Ohio River Monday.

The steamer Alliquippa was carrying the pipe to be delivered to Oklahoma and Texas oil fields. It is one of the largest river shipments on record.

GREAT LAKES LETS CONTRACT

The Great Lakes Pipe Line Co. has let a contract for its line from Cordova, Ill., to Chicago, to the Allied Construction Co., Dallas, Tex.

TODAY'S engineers—constructing one of the greatest transportation systems the world has ever seen—are the Empire Builders of a new era.. In their capable hands rests the future of a great industry, dedicated to the task of providing a *dependable* supply of natural gas for tomorrow's industrial and domestic consumers.

These engineers know that soil corrosion destroys buried steel pipe—*unless it is adequately protected.* They insure and prolong the serviceable life of the pipe by applying the time-tested protective coating — *Bitumastic Enamel.*

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Houston, Petroleum Bldg. | Chicago, 20 N. Wacker Drive | Cleveland, Union Trust Bldg. | Philadelphia, 401 N. Broad St. | Los Angeles, 2461 E. 8th St. | San Francisco, 345 Vermont St.

Twenty Three New Wells in Old Fields

Eight Are Oil Wells and 15 Gassers While 6 Dry Holes Were Also Reported From Pennsylvania Grade Fields

By Special Correspondent

PITTSBURGH, Pa., May 2.—Twenty-nine wells were completed in the Pennsylvania Grade fields of West Virginia, southeastern Ohio and southwestern Pennsylvania in the week in review. Considerable new work was started considering the state of the market. Of the completions there were 15 gas wells, none of them large in output, and 8 oil wells of small production, a total of 23 new wells, while 6 dry holes were reported, an unusually large proportion for this part of the country.

From the Southeast Ohio Field, the reports indicate the completion of 4 oil producers and 2 gassers and also include 4 dry holes. The oil wells had an initial production of 36½ bbls.

In Medina County, E. R. Edson & Son Co. continued their success on the M. A. and Eva Franks farm, in Lot 20, Section 16, Chatham Township, with the completion of their No. 16 Franks at 465 feet. This well produced 15 bbls. within the first 24 hours after being shot in the Buell Run sand. The same operators also completed their No. 15 on this farm at the same depth. It, likewise, is a 15-bbl. producer from the Buell Run sand.

In Washington County, the Massilon Macksburg Oil Co. completed its test on the W. R. Dutton farm at Center in Section 17, Aurelius Township, at 312 feet and in the Macksburg 300-foot sand for a 1½-bbl. natural producer. In Independence Township, F. L. Johnson and others brought in their test on the John Bliss farm in the Maxon sand for a 5-bbl. producer.

The Keener sand at 1,287 feet, in Marion Township of Noble County, and on the F. M. Calland farm, is producing 500,000 feet of gas for E. O. Burbacker and others. This is a second test on this farm. The Preston Oil Co. brought in their test on the B. F. Slack farm in Washington Township, Muskingum County as a gasser.

The wildcat test of Elliott & Co., on the J. M. Elliott farm, in the NE, Section 18, Cross Creek Township, Jefferson County, resulted in a dry hole at 1,300 feet and in the Berea sand. This well is located about 1 mile northwest of the Infirmary farm. The test of the Preston Oil Co. on the George M. Oxley farm in Perry Township, Coshocton County, was dry. Well No. 7 of the First National Bank, 75, New Matamoras on the J. L. Amos farm in Grandview Township, Washington County, was found dry in the Injun sand at 1,670 feet. In Athens County, York Township, A. W. Porter and others completed their No. 4 on the Lick Run Coal & Clay Co. tract. It was dry and is being abandoned.

Drilling in Ohio

In Muskingum County, the following operations are reported: Wilson Brothers have a rig up on their own property in Washington Township. In Perry Township, the Preston Oil Co. has a rig up on the John C. Hicks farm, and in Wayne Township, the Ohio Fuel Gas Co. has a rig standing for a test on the Lincoln Taylor farm in Section 3. Howard H. Doyle has a rig up on the William Cline and others' property in Section 3, Clay Township.

The Atha Oil Co. has drilled its test on the W. H. Doty farm in Section 12, Washington Township, Muskingum County, down to 3,770 feet, and in the same township, the Wehrle Co. has reached the 1,920-foot level in its test on the N. T. Coconis farm. The test of the Ohio Fuel Gas Co. on the Joseph Hale farm in Falls Township, is now at 2,740 feet.

In Coshocton County, the Preston Oil Co. is quite active. Its test on the Albert Mikesell farm in Perry Township, Section 7, is now at the 2,900-foot level, and the test on the Chase Griffen farm in the same township, Section 5, is at 2,500 feet, while the test on the Edward Wilt property in Section 6, same township, has been drilled down 1,500 feet. On the William Frazee farm in New Castle Township, this operator has sunk its test to 700 feet.

The Associated Oil & Gas Co. has a rig on the ground for a test on the A. L. Jones farm in Section 4, Starr Township, Hocking County. In Knox Township, Vinton County, Section 4, the Co-Operative Oil Co. has reached the 600-foot level in the drilling of its test on the J. H. Moore farm.

WEST VIRGINIA

Completions in the West Virginia Field during the past week totaled the same number as those of last week. There were 8 gassers, 3 oil producers and 1 dry hole in the 12 completions.

Tierney & Cain completed their test on the Chess Poling farm in Sherman district, Calhoun County in the Injun sand for a 1-bbl. producer. The test of Raad & Moses on the Jahu Shahan farm in Ten Mile district, Harrison County, came in at 2,791 feet and in the Fifth sand for a 2-bbl. per week producer. On the south bank of Elk River, the United Fuel Gas Co. cleaned out and shot its No. 563 on the P. C. Huffman farm in Big Sandy district, Kanawha County, in the Weir sand. This old well was a gasser but since the cleaning out and shooting, it has developed into a 1-bbl. oil well.

Gas Wells

The Larner Gas Co. Completed No. P-86 Alfred Swann in Grant district, Cabell County, in the Big Lime sand for a 500,000-foot gasser. In Harvey district, Mingo County, Frank Yates completed the test on his own farm at 1,132 feet and in the Maxon sand. This well is producing a shade better than a half million feet of gas a day. Null & Moorehead brought in a gasser in their test on the O. J. Bartrug farm in Church district, Wetzel County, at 2,967 feet, and the test of L. P. Bickel on the Louis Bennett farm in Center district, Calhoun County, came in as a light gasser in the Injun sand and at 2,188 feet.

On the Rush Run waters of Paw Paw Creek in Paw Paw district, Marion County, the South Penn Oil Co. completed No. 5 R. D. Stewart in the Injun sand at 2,071 feet as a fair gasser. In Marshall County, the Valley Oil & Gas Co. brought in a test on the W. E. Peterson farm in Liberty district as a gasser at 3,020 feet. A gasser is the result of the completion of No. 4 of the Clifton Oil & Gas Co. on the Cain heirs property in Centerville district, Tyler County. This well, located on Short Run, was completed at 2,106 feet and in the Big Injun sand.

C. B. Lewis and others are abandoning their test on the B. E. Summers farm in Sherman district, Calhoun County. It came in as a very light gasser in the Injun sand and at 2,084 feet. At 1,850 feet and in the Big Injun sand, the test on the Oscar Williams farm belonging to H. Underwood came in dry. The Oscar Williams farm is located in McElroy district, Tyler County. The test of R. H. Adkins and others on the R. W. Morris farm in McComas district, Cabell County, is in the Berea sand at 2,332 feet and waiting upon a test.

Drilling in West Virginia

In Ritchie County, Ross Richards is drilling at the 400-foot level in his test on the School Lot in Grant district, and C. H. McClure is drilling at 1,250 feet in his second test on the Isaac Weekley farm, while the Cairo Oil Co. has their No. 3 well on the J. B. Markey farm down to a depth of 1,150 feet. In Murphy district, J. F. Deem and others have sunk their test on the Rosa V. Johnson farm to the 500-foot level. The Continental Oil Co. has abandoned the location for a second test on the N. T. Mason farm in Grant district, and J. W. Deem and others are rigged up but shut down for the present on their test on the W. W. Lawrence farm. The old well on the Anna Dotson farm in Grant district that belongs to C. R. Lamp and others is shut down at 1,930 feet in the process of being drilled deeper. C. B. Lewis and others have a rig standing for a test on the W. P. Baker farm and Godfrey L. Cabot has made a location for a test on the J. N. Eddy farm in Murphy district.

H. C. Zogg has made a location for his No. 3 on the Maddox heirs property in Scott district, Putnam County, and the Celia Oil & Gas Co. has done likewise for No. 5 John Tormey. The test of J. V. Reishman on the William Dent property in Scott district is shut down at the 900-foot level, while the old well of the United Fuel Gas Co. on the M. J. Rogers farm in Curry district that is being drilled deeper is drilling at 5,055 feet. This is the United Fuel Gas Co.'s No. 4,121.

The Manufacturers Light & Heat Co. is drilling at 3,100 feet in its No. 3,380 on the W. H. Loper and others farm in Liberty district of Marshall County, and at 850 feet in its No. 3,474 on the August Wendt farm in the same district and county. In Sandhill district, the Myers Oil Co. has a rig standing for a test on the C. M. Strickland tract.

In Dekalb district, Gilmer County, the Hope Natural Gas Co. is rigged up to drill their No. 6,251 on the W. A. Gainer down to deeper sands. This is an old well. McCall and others have reached 870 feet in the drilling of their test on the W. A. Moore farm, and Clem Morris and others are down to a depth of 1,675 feet in their test on the W. F. Roberts farm in Dekalb district. Frank Golden and others have a rig standing for a test on the Elva J. Hardman property in Dekalb district, and A. E. Ellis and others have a rig building on the Harley Gainer farm. This is for a test well.

SOUTHWEST PENNSYLVANIA

From the four counties comprising Southwest Pennsylvania there were seven completions reported. The only oil producer reported had an initial production of one-half barrel. There were five gassers and one dry hole also reported.

John Reed & Co. brought in a 750,000-foot gasser when they completed their second test on the S. Patterson farm in Hanover Township, Washington County, at 1,069 feet and in the Big Injun sand. The test of H. Furman and others on the

(Continued on Page 101)

TEST IN THE RIBSTONE FIELD MAY DEVELOP INTO FLOWING WELL

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, May 2.—In the Ribstone Field, eastern Alberta, Meridian Oil Co.'s No. 3, LSD 4, Section 16-45-1w4, shows strong indications of developing into a flowing well. Last year the test got a fair commercial production of heavy crude at 1,882 feet and was shut in, with around 1,200 feet of oil in the hole. Recently, preparing to install pumping equipment to deliver crude to the C.P.R., the oil was found standing at the top of the hole, and sufficient crude to fill a 12-foot sump had been forced through the small vent in the valve. Since being opened, the well is reported to have been flowing by heads. Installations are being completed to deliver the crude oil to the C.P.R. and a central pumping plant is being put in to handle production of the three Meridian wells and any other producers that may be drilled. Storage tanks are also being erected, and it is expected the field will be in steady production within a few weeks. The C.P.R. has contracted to take 400 bbls. of crude per day for fuel oil. In the same field, Rayco Oils' No. 1, LSD 3, Section 4-47-1w4, is reported drilling below 900 feet. Algonquin Petroleums' No. 2, LSD 5, Section 16-45-1w4, is reported rigging up. Commonwealth Petroleums, Ltd., of Calgary, has a part interest in this test, which is just north of Meridian's No. 3 producer.

Central Turner Valley

In the Central Turner Valley, Illinois-Alberta Oils' No. 1, LSD 14, Section 12-20-3w5, has been brought back into production after deepening to 3,890 feet and shooting with 250 quarts. The well is one of the oldest in the Turner Valley Field. It was started during the boom in 1914 as Northwestern Pacific's No. 1, and taken over in 1915 by Illinois-Alberta Oil & Refining Co. Drilling continued intermittently for several years, and in 1919 a small flow of light crude was struck, from which production was taken intermittently. After Royalite's No. 4 got its big production of crude naphtha in the Madison, Illinois-Alberta's No. 1 was, in 1927, deepened to that horizon, being the first Turner Valley test drilled into the lime with diamond drill outfit. For several years a consistent production of around 100 bbls. a day was secured from the lime, but later this pinched off. Some eight months ago it was decided to clean out and deepen; the tools, lost when the well first got production in the lime, were recovered, and a small shot developed some gas with around 25 bbls. crude naphtha recovery. The hole was then deepened 28 feet and the second shot put in. In the earlier drilling the outfit was twice destroyed by fire. Production test is now being made but early estimates indicate the well will run close to its original production from the lime. Illinois-Alberta's No. 2, same LSD, which has been standing at 3,683 feet, will probably be deepened to the same horizon as soon as No. 1 is finished.

British Dominion Oil & Development Corp.'s No. 3, LSD 6, same section, is reported drilling 340 feet in the lime at 5,542 feet, with wet gas flow estimated around 3,000,000 feet and increasing.

Dome Oils' No. 2, LSD 16, Section 36-19-3w5, has swabbed considerable light crude production from the Dalhousie sand at 5,135-5,200 feet, and is deepening to the lime.

In the north central area, Richfield Petroleums' No. 2, LSD 12-13, Section

(Continued on Page 101)

PIPE LINE WAREHOUSE!

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Sucker Rods; Pull Rods; Plunger Working Barrels (Pumps); Stuffing Boxes, etc.

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Manila Cordage, Drilling Cables, Bull Ropes, Cat Lines, etc. Either Waterflex or Plain. Waterflex cordage is impervious to moisture.

TULSA, OKLA.

- REID

R P O R A T I O N

B U T O R S

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

DANGER OF TANK EXPLOSIONS

I wonder if you can tell me just what percentage of air must be mixed with gasoline vapor to create danger of explosion of a tank. Is it true that there is just as much danger of explosion from vapor pressure in a tank containing some heavy oil as there is in the case of gasoline?—L. N. U.

Contrary to wide belief, some of the heavier oils offer greater danger of explosion under certain conditions than gasoline does. The following information in answer to your questions was obtained from M. B. Anfenger, fire prevention engineer for the Standard Oil Co. of California:

"Tank explosions are always due to the presence of vapor. We know that gasoline vapor before it can burn or explode must be mixed with air in certain proportions and that it must have at least 94 per cent of air for any burning or exploding at all. On the other hand it will not burn if mixed with more than 99 per cent of air. In terms of the vapor content, there must be at least 1 per cent and not more than 6 per cent of gasoline vapor mixed with air for a combustible or explosive mixture. If we have about 3 per cent of gasoline vapor mixed with approximately 97 per cent of air we get a good, rapid burning, popularly termed an explosion, when the mixture is ignited. If, to this mixture more gasoline vapor is added, the mixture will not support flame when the vapor content exceeds 6 per cent. Strange as it may seem if, instead of adding gasoline vapor to the 3 per cent mixture, we add an inert vapor such as steam, we would have to bring the steam concentration up to about 40 per cent of the mixture before it would be rendered nonexplosive. In other words, if gasoline vapor is added instead of an inert gas, very much less is required to render the mixture nonexplosive.

"Gasoline and other volatile oil tanks are not as dangerous from the explosion standpoint as some of the heavier oils. The vapor pressure of lubricating oil, fuel oil and kerosene at ordinary temperatures is so low that the vapor space above the oil contains less than 1 per cent of vapor and consequently the vapor space will not ordinarily be explosive. In case the temperature of the oil is raised, however, as by a nearby fire, an explosion vapor air mixture can develop in time. In the case of lubricating oil the fire would have to be directly in contact with the tank.

"The vapor space above engine distillate and some crude oils is apt to contain just enough vapor to produce an explosive mixture at ordinary temperatures while the vapor pressure of gasoline and other similar light oils is high enough so that the vapor space is usually too rich to explode. Of course, the gasoline tank may breathe in air when cooled or when the gasoline is being run out of the tank and thus we may at times find a pocket of explosive mixture in a gasoline or other volatile oil tank. Most of the time, however, we will expect to find a mixture too rich if the tank roof is gas tight and properly vented. We thus see that no matter what product is stored, an explosive mixture may be present in the tank under some conditions."

METHODS OF MIXING MUD

Will you tell me please what is considered the best method of mixing heavying materials with rotary mud in order to be sure the mixing is well done? Will you also tell me the best way of releasing gas from mud that is being used in drilling?—T. E. E.

The importance of thorough mixing where weight-adding substances are introduced in the circulating mud is recognized. One method that gives good results is the jet hopper system, using the mud in the pit as the jetting fluid. After the necessary quantity of admixture is added to the mud in the pit the fluid should be thoroughly circulated with a hose; samples then should be taken for weight from various parts of the pit to insure that a thorough mix has been made. Some operators prefer mixing mud and admixtures by cooking them with steam in wooden boxes. The general opinion is that this practice is injurious to the mud. Admixtures, of which the main ingredient is Barites, are used almost exclusively throughout the Mid-Continent at the present time. Mud fluid with the proper chemical treatment (usually a soda treatment) can be made to remain sufficiently fluid at much heavier weights than nontreated mud. Admixtures added to mud treated in this manner may add enormously to the weight and effectiveness of the mud.

Mechanical methods that are reported to yield satisfactory results in liberating gas from mud are enumerated as follows by the A.P.I. drilling practice committee of the southwestern district:

1. Aerating towers.
2. Long baffled bottom wooden ditches.
3. Use of gunning system consisting of a joint of pipe perforated on one side, with perforations directed at a concave deflector plate which causes the mud to flow from the deflector plate into the suction pit in a thin sheet as it is pumped through the perforated pipe from the settling pit by an auxiliary pump.
4. Mechanical vibrating screens.

There are several chemicals manufactured which, when mixed with drilling fluids, tend to reduce the film tension on the gas bubbles in the pits and ditch. Preparations of this nature are being used in the Hobbs, New Mexico, Field.

WHEN WELLS STOP FLOWING

We have several wells in the bottom lands here in the Oklahoma City district. These wells make around 50,000 bbls. a day and, safe to say, 100 tons of sand. Now, what will happen when they stop flowing? Will it be possible to pump these wells with that flow of sand? It is the Wilcox sand and is about 80 mesh. —E. M. C.

Your question is an interesting one but it is rather involved if a complete answer is to be given, because the treatment required by individual wells varies. In many sand wells 5-inch screens with opening equal to 80 or 100 mesh (wire screen scale) have been set below the 6⅝-inch casing and this has helped materially to hold back this loose sand.

It would seem that the amount of sand moving with the oil is proportionate to the quantity of oil the well is making, so a well now making 50,000 bbls. of oil and 100 tons of sand produces about 4 pounds of sand per barrel of oil.

If the well is a pumper and making about 150 to 300 bbls. of oil daily it would produce from 600 to 1,200 pounds of sand, assuming that the velocity of the oil in the bottom of the hole is still high enough to carry the same ratio of sand as when the well was making 50,000 bbls. of oil.

It would seem therefore that with the diminishing flow of oil, lowering of bottom-hole pressure and decreased gas volume produced with each barrel of oil the movement of sand will be retarded and the pumps will not be required to handle any appreciable amounts of sand with the oil.

There are pumps that will handle a normal amount of sand and they are being used in Gulf Coast and California fields with success. It is doubtful if the sand conditions in Oklahoma City pumping wells will ever be as bad as those in the districts named. Gas anchors and sand traps can also be used below the working barrels to good advantage.

Sand wells of this type evidently can be provided with screen liners below the casing, the screen opening to be selected to keep out as much sand as possible; pumps that will handle sand without difficulty can be installed, and gas anchors and sand traps provided below the working barrel to catch as much sand as possible before it enters the standing valve. It is not believed that this will be as difficult a problem for the pumping wells of Oklahoma City as several others having to do with the shutting off of gas and water from the producing sands before the wells actually reach the pumping stage.

WHY WAS IT CALLED THAT?

STILL

"Still" is a shortened form of "distill," which comes from a Latin word and means to let fall or precipitate in drops. In oil refining the still is a receptacle in which petroleum is vaporized through application of heat at various temperatures, the vapor then being liquefied by condensation. The different hydrocarbons thus are separated and then collected in another part of the apparatus in the order of their boiling points as gasoline, kerosene, etc. The shell still, a boiler-like device used in the early days of the industry, has been supplanted in great part by the pipe still.

USING PHOTOGRAPHIC MAP

May I ask you to explain for me how the map or photograph made by a photographer in an airplane is used in surveying a prospective oil property? Is this map used in fixing property lines or is the courthouse record used for that? My interest lies in the fixing of these property lines rather than in any indications of oil which I understand these photographs show in some cases.—N. O. U.

The following information in answer to your question is obtained from a booklet prepared by W. H. Wilson, "The Application of Aerial Photographic Maps to the Oil Industry," and published by the Edgar Tobin Surveys:

"The use and application of the photographic map are along three general lines.

"1. The abstract data from the records is first obtained and the photographic map used to correct such errors as are found to exist in this data. By this method the two separate versions of the property net, the aerial map on one hand and the abstract data on the other, are used to correct and interpret information shown on each. Known survey or property corners on the aerial map are identified, and by building on to this starting point from the abstract data, discrepancies in such data are largely overcome. This use of the photographic map may be aptly described as a complementary use.

"2. The photographic map is taken into the field and used somewhat as a plane table sheet. Property lines are obtained by interviewing each landowner, or as many as can be reached, and determining from them the boundaries of their respective properties. In most areas the photographic map shows sufficient of these boundaries so that this can be readily done. The result is a map that is entirely free from any interpretation from the records. It is possible for one man in an automobile to secure the ownership covering an entire county by this method in from four to six months. This is an average figure arrived at as a result of work done in South, Central and East Texas in farming country that is cut up into small tracts. It is estimated that by this method approximately 85 per cent of the total ownership can be secured. However, where the remaining 15 per cent ownership is not secured, there is no distortion to property lines in these vacant areas due to the character of the aerial map and the fact that the surrounding property lines have been determined.

"3. This method is a combination of 1 and 2. It consists of the abstractor using the photographic map instead of a blank sheet of paper at the time he is making plats of the various properties within a headright or survey. From the record descriptions each tract is platted directly on the photographic map. Where this abstract information is conflicting or erroneous, the aerial map will usually enable him to correct the difficulty. Where the error cannot be corrected on the photographic map or where abstract data is totally missing, the abstractor can then take the photographic map on the ground and determine the ownership and property lines by going directly to the landowners in question and asking them to show him their boundaries. This method involves slightly greater abstract cost. However, the detail map that is sent in to the draftsman will be absolutely correct, and the usual situation whereby the draftsman has to compromise or adjust errors without having all the facts at hand is avoided by this method."

ALUMINUM PAINT—THE COAT OF METAL PROTECTION

Its metallic pigment turns back fumes, sunlight and sunheat

There's no need to sacrifice metal to rust and corrosion—no need to allow the sun's heat to cause excessive evaporation of valuable oil. Use aluminum paint on tanks of all kinds; on piping and cracking equipment. Its metallic pigment provides a film that blocks the penetration of moisture—defies the destructive action of fumes and sunshine.

Aluminum paint outlasts other paints because its pigment is composed of flat, thin flakes of pure aluminum. When it is applied, these tiny flakes of aluminum overlap —"leaf"—to form a continuous coat of metal protection.

To obtain the maximum in protection and durability, use aluminum paint made with Alcoa Albron Powder. Aluminum Company of America does not sell paint. But aluminum paint made with satisfactory vehicles and Alcoa Albron Powder may be purchased from most reputable paint manufacturers, jobbers and dealers. Be sure the pigment portion is Alcoa Albron and is so designated. Let us send you the booklet, "Aluminum Paint, the Coat of Metal Protection." Please address ALUMINUM COMPANY of AMERICA; 2417 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALBRON

ALCOA ALBRON

POWDER FOR

ALUMINUM PAINT

Modern Equipment Reduces Station Size

Electrically Driven Centrifugal Pumps in Pipe Line Stations Have Completely Changed Conditions in Crude Oil and Gasoline Transportation

By L. G. E. Bignell
Petroleum Engineering Editor

In the early days of pipe line transportation of crude oil from field to market steam driven pumps were usually used with their accompaniment of boilers in a separate building so that the whole plant occupied a large plot of ground and to keep all of this equipment in condition required a number of men for each tour. The modern pipe line station is notable because of its contrast in size and the arrangement of the equipment within a small concrete and steel building that requires the services of one man per eight-hour tour. This is another improvement in pipe line practice, the reducing of hours of labor for the crew from 12 to 8-hour shifts.

Examples of this type of station design are found in the stations of the Sinclair Pipe Line Co.'s new 12-inch pipe line from the Oklahoma City Field to the Coffeyville, Kans., 7,500-bbl. refinery of the Sinclair Refining Co. This line is handling about 44,000 bbls. of Oklahoma City crude daily, but its total capacity is about 60,000 bbls.

The accompanying page of pictures will tell a story as it shows the station near Jennings, Okla., and views along the line as the pipe was being laid.

It will be noted that in the stations located at Oklahoma City and Jennings, Okla., there are two main pumping units consisting of Byron Jackson three-stage centrifugal pumps direct connected to General Electric motors, with a Gaso motor driven 10x18-inch suction pump. This practically completes the equipment within the station house except for electrical control apparatus located behind the fire wall at the end of the pump room.

The flow of oil from the field is directed into large receiving tanks equipped with Wigging floating roofs and placed on a slight elevation near the pipe line station east of the Oklahoma City Field and gravitates from the tanks to the station. This oil moves under an hydrostatic head from 10 to 20 pounds, into the first centrifugal pump in the station through a set of valves located outside of the station.

New Type Valves Used

In the main line there is a 12-inch combination check and gate valve that is closed when the oil is passing through the pumps and gate valve between main pipe line and pump suction line is opened. The first pump is fitted with 9-inch impellers and runs at a speed of about 3,550 r.p.m. and is of the three-stage type. It builds up a pressure of about 320 pounds before the oil is discharged into the suction side of the second centrifugal pump that is fitted with 9⅜-inch impellers and is also of the three-stage type.

In the second pump the pressure is built up to about 750 pounds per square inch, or the working pressure in the line near the station and under these conditions about 44,000 bbls. of oil are handled daily.

The oil leaving the discharge side of the first pump returns to the main pipe line and is diverted into the suction of the second pump when the second combined check-gate valve in the main line is closed. It is possible to open this valve in the main line and use only one pump in each station if such operating conditions are justified.

Handling the full capacity of the line the second combination check-gate valve is closed and a valve between main line and suction on the second pump opened and the oil therefore passes from the first pump at about 350 pounds pressure into the second pump where the pressure is further increased to about 750 pounds per square inch and it is then passed on through the main line to the station tank at the next station.

These check-gate valves are built with a gate valve, manually operated, in the body of the valve, but the body is made longer than is usual and in one end there is placed a swing check valve that is normally open when the oil is flowing through the main line from station to station. If anything happens to build up pressure on the discharge side of this combination valve the check is automatically closed and prevents the fluid from running back along the system. It can only be opened again when this adverse condition is corrected, or the gate valve is itself closed to take the pressure off the up side of the check valve.

The valve is designed by J. F. Blake, general superintendent of the Sinclair Pipe Line Co., and built by Wheatley Brothers Brass Foundry & Machine Works Co., of Tulsa. The other valves used in this system are all of the high pressure gate type and specially designed for pipe line service. They are all manually operated.

Electric Equipment Modern

These stations are all electrically operated and the motors and auxiliary equipment of the latest design. The main motors are built by the General Electric Co. and described as 220 volt, 3 phase, 60 cycle, 113 amperes, induction type, running at approximately 3,550 r.p.m. when delivering 500 horsepower to the direct connected centrifugal pumps.

On the Gaso 10x18-inch suction pump

Eight-inch pipe clamps cut ready to place on 6-inch pipe line.

there is mounted a 15-horsepower General Electric, 440 volt, 3 phase, 60 cycle, 875 r.p.m. motor.

The large motors draw their cooling air from the pump room in which they are housed and discharge it through underground vents to two outside boxes. As this air is heated in passing through the motor this heat is utilized during cool weather by closing a discharge gate in the outside vent box and opening floor grates in the office so that the warmed air can enter this room and heat it. The air is not sufficient to serve as the only heating medium in the coldest weather and is supplemented by electric heaters under severe weather conditions.

The warm air can be discharged directly into the pump room as it leaves the motor housing if this is desired as there are two discharge openings in the sides of the conductors that carry the air from motor housing to the underground passageways that lead to the outside vent boxes.

Auxiliary Electric Equipment

Behind the fire wall and in a room adjoining the office there is installed automatic compensators of the C. R. 7,051—L2 500-horsepower, 60 cycle, 3 phase type with the primary side wired for 200 amperes, and the secondary wired for 25 amperes. There is a bank of transformers erected in the yard near the station where the line current is stepped down to the voltage required for the station use.

In the same room with the automatic compensators there are three Cutter Hammer and three Trumbull Electric Co. wall switches. The compensators are made by the General Electric Co.

All of this machinery is housed in a structural steel building that is covered with galvanized iron sheeting and the machinery is mounted upon concrete foundations and the room floored with concrete. The fire wall between motor room and office and compensator room is made with a frame of old 2-inch pipe that carries wire screen and over the screen is plastered a grout of cement that forms the wall. Everything is compact and the rooms are well lighted and ventilated.

Line to Sand Springs, Okla.

The Sheehan Pipe Line Construction Co., of Tulsa, is laying a 6-inch line from the Jennings, Okla., station to the Sinclair refinery at Sand Springs, Okla. This line cuts into the 12-inch main line at the Jennings station and oil will be pumped through it without the use of any other pumps than those in the Jennings pumping plant. The line is about completed.

In laying this line across streams a new type of river crossing clamp is being used. It is shown in the accompanying picture and is made out of line pipe of suitable size cut to lengths that are varied with the pipe diameter.

It will be noted that the short lengths of 8-inch pipe for this 6-inch line are cut out on each end. The portion of the pipe that remains forms a spacer to hold the sleeve an equal distance away from the pipe when each of these pieces are bent down.

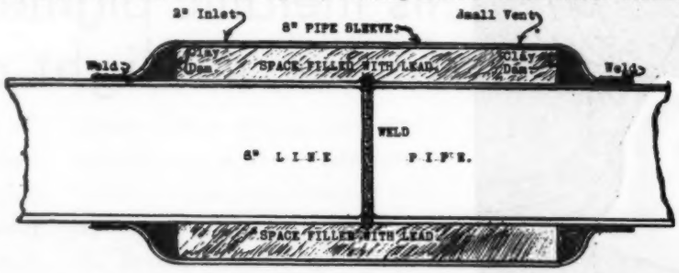
In putting this type of sleeve over a welded joint in a line the procedure is about as follows:

The prepared sleeves are slipped over the joints of pipe when they are on the ground and before the welding is done. When the pipe is all welded together the welder goes back along the line and slips the spacers over the welded joints and heats them on the sleeve, and while hot drives them down to the line pipe size.

In driving these pieces of the sleeve down they are flattened out along the pipe and then welded on each side but not on the end of the spacer. The reason for this is to place the weld at right angles to the weld that joins the line pipe.

When the sleeve is welded in place the ends are plugged with clay and a band fastened over the clay to keep it from moving. This clay dam at each end of the sleeve prevents the hot lead, that is poured inside the sleeve, from running out.

The next move is to cut about a 2-inch diameter hole in the top side of the sleeve near one end and a smaller vent hole in the top side of the sleeve at the other



Sketch showing application of 8-inch steel crossing clamp on 6-inch pipe line.

HEATING BOILER FEED WATER LOWERS FUEL COST AT DRILLING WELLS

By R. P. Brouthertin
Petroleum Engineer, The Texas Company*

The following report treats on the saving due to heating feed water of boilers, also the use of condensers to handle exhaust steam from pumps on drilling wells.

Before water fed into a boiler can be converted into steam, it must be brought to the temperature corresponding to pressure in the boiler. The temperature of boiling water at 250 pounds gauge pressure is 400° F. This temperature varies as boiler pressure varies. As the temperature of water rises it absorbs heat at the rate of one B.t.u. for each degree Fahrenheit. This is known as the heat of liquid, or sensible heat. After reaching the boiling point a further addition of heat is necessary to transform the water into steam. This additional heat is expended without increasing the temperature of the water and is known as the heat of vaporization, or latent heat. The heat of vaporization at atmospheric pressure requires the expenditure of 970 B.t.u. to change 1 pound of water into steam at the same temperature. At a pressure of 500 pounds only 762 B.t.u. is required to change 1 pound of water into steam; in other words the higher the pressure on a boiler the less fuel is necessary to overcome the heat of vaporization.

The approximate saving in fuel due to heating the boiler feed water by means of heat that would otherwise be wasted can be readily computed by the following formula: Per cent saving in fuel:

$$\% = \frac{100\,(h - h')}{H - h'}$$

H = Total heat in B.t.u. above 32° F. per pound of steam at the boiler pressure.

h' = Temperature of feed water entering the heater.

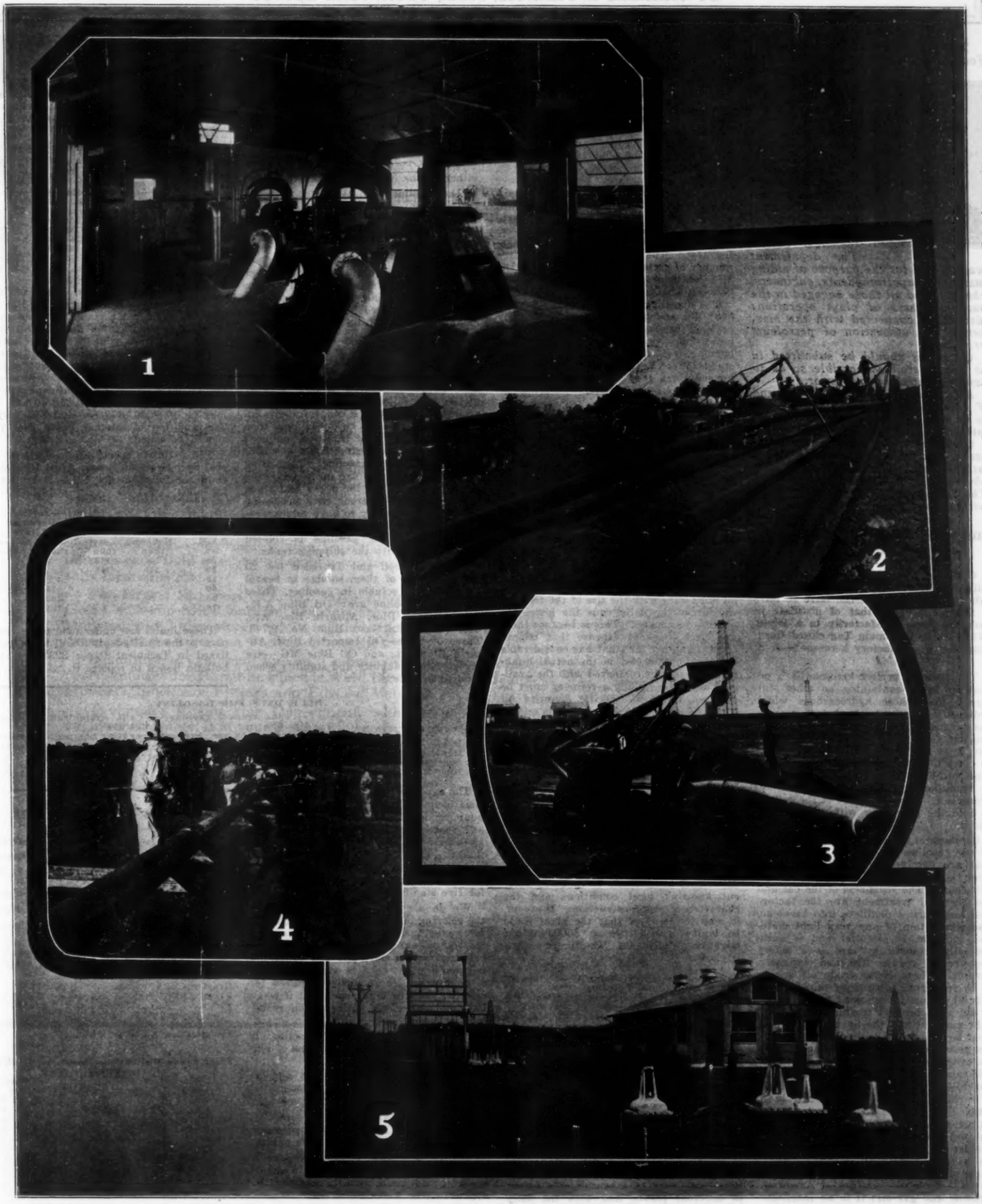
(Continued on Page 103)

*Read before Wichita Falls chapter, American Petroleum Institute.

end. Into the large hole molten lead is poured and it will fill the annular space between the out..ide of the line pipe and the inside of the pipe sleeve.

This lead gives weight to the clamp or connection, and at the same time it acts as a cushion and shock absorber for the welded joint. The pipe sleeve when filled with lead and welded to the pipe at each end forms a tension member over the welded pipe line joint and strengthens the line. The sleeve being comparatively smooth and round does not offer much resistance if the line has to be pulled out of the crossing.

These steel pipe sleeves are being used extensively by the Sinclair Pipe Line Co. and it is stated that about 300 pounds of lead is used in each sleeve 8 inches in diameter for a 6-inch diameter line. This lead is now offered at about $4.50 per 100 pounds in the St. Louis market. Lead weighs about 709.6 pounds per cubic foot or .4106 pound per cubic inch.



1—Interior of Sinclair Pipe Line Company station, Jennings, Okla. 2—Laying pipe on line from Oklahoma City, Okla., to Coffeyville, Kans. 3—Lowering pipe into ditch in the Oklahoma City oil field. 4—Welding 12-inch pipe along Sinclair Pipe Line Company's new line. 5—Exterior view of Jennings station, Sinclair Pipe Line Company.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

IDENTIFICATION OF KEROSENE AND DISTILLATE

Can a kerosene be identified from distillate by its gravity and flashpoint? In other words does kerosene have to have a flashpoint below that of distillate in order to burn satisfactorily in a lamp? What is the maximum Tag closed flashpoint for a satisfactory kerosene?—J. S.

The ideal or perfect kerosene is a petroleum liquid containing no other substance than those hydrocarbons which ordinarily constitute the larger part of the product. The impurities of kerosene are but a very small part of the whole, but it is not profitable for the refiner to carry the purification of the raw kerosene to the limit that would be necessary to manufacture an absolutely pure hydrocarbon. It is the object of the refiner to hold the impurities within reasonable limits.

Commercial kerosene may contain more or less gasoline and gas oil, the fractions that are obtained just before and just after the separation of kerosene from the petroleum. The sharpness of the cut and the chemical treatment are the factors that may turn a distillate into kerosene. The elimination of any very light material, gasoline, is essential and is quite generally required by law as a safety measure to reduce fire and explosion hazards. There is no crude oil known to be free from sulphur so sulphur is a natural impurity that must be controlled by suitable chemical treatment. Both the light material and the heavy oil, gas oil, must be removed or maintained at a very low percentage by the distillation process. An excess of either sulphur or heavy oil will cause the product to produce objectionable odors, smoke and form deposits of carbon and soot when burned in a lamp.

A petroleum distillate is any liquid that is obtained from petroleum by the process of distillation, but the trade makes use of the word to signify an impure or unrefined product used as a domestic fuel which is largely a mixture of untreated kerosene and gas oil; it is an indefinite material. Kerosene is a specific material, a product separated from petroleum, purified and brought to such a state of purity that it will conform to recognized specifications.

It is not possible to distinguish a kerosene from a distillate by gravity and flashpoint; they might be exactly the same. The federal specification does not mention gravity as a limiting property, but as sold throughout the United States the gravity of kerosene appears to vary between 38° A.P.I. and 48° A.P.I. The flashpoint should not be below 120° F., although some states permit a lower flash, but there is no maximum flash mentioned. An extreme is to be avoided and is usually associated with the burning test. A very high flashpoint kerosene would probably not give a good burning test. The examination of a large number of tests of kerosene made in the Mid-Continent area suggest a flashpoint between 120° and 180° F.

The distilling range, between 300° and 500° F., and the thermo viscosity, say between 300 and 450, are more important indications than the flashpoint. The burning test, made under the A.S.T.M. standard conditions, is the final means for judging a good kerosene and for comparing it with a distillate.

REFINING COST TOPPING AND CRACKING

I would greatly appreciate a general estimate of the average cost of refining by the cracking process Mid-Continent crude oil. It is suggested that perhaps the total average refining cost per barrel might be broken down to show the following or similar items—investment at 6 per cent; depreciation; maintenance; labor; power; fuel; overhead; other process costs—D. F. M.

The actual refining cost per barrel of oil must vary with the size of the refinery the larger the daily runs the lower the expense per barrel. This is because there are large items of expense that remain fixed. Another fact that has considerable bearing on this cost is the actual quantity processed as compared with the available capacity. While a refinery must be designed for some specific quantity on the basis of daily throughput, it is seldom that the total capacity can be maintained for more than a very short time. Probably 65 per cent of the total capacity would be fairly indicative of the operating conditions for most refineries at this time.

It is necessary to assume some capacity for the purpose of the discussion. An 8,000-bbl. plant for both topping and cracking would represent a good sized working unit. Just how much it would cost to build a refinery capable of topping and cracking 8,000 bbls. of oil a day would be difficult to estimate without knowing local conditions and the character of the construction. However, it may be assumed that the plant could be built for as little as $500,000 but might cost $1,500,000. The figure actually chosen is $750,000.

Estimated Average Refining Cost. Topping and Cracking

Item—	Cents/bbl.
Investment at 6 per cent	1.5
Depreciation	6.0
Maintenance	4.0
Labor operating	5.0
Power and lights	3.0
Fuel	5.0
Adm. and selling	4.0
Treating, other costs	2.5
Total	34.0

While there are no data available from which to calculate an average cost of refining, it is thought that 34 cents a barrel should come very close to the actual operating expense of a refinery of this type and capacity. Some of the larger items may vary to a considerable extent in different plants, and with the daily operation; this is especially true of depreciation and maintenance, in addition to the first cost.

DYES FOR COLORING GASOLINE BLUE

What dyes are used for coloring gasoline blue? Are these dyes entirely soluble in the gasoline and what amounts should be used to get a good blue? Is there any objection to the dyeing of gasoline, that is, does the dye do any harm either to the motor or reduce the power of the gasoline?—H. W. B.

There was an extensive article by Egloff, Morrell and Truesdell in The Oil and Gas Journal, March 5, 1931, page 133, in which the coloring of gasoline was discussed. These authors give the properties of many dyes and mention reasons for giving gasoline a distinctive color. The facts presented here are to a large extent abstracted from this article.

Many dyes are insoluble, or but slightly soluble, in gasoline but solubility of some dyes is increased in the presence of a third substance such as oleic acid, benzoic acid, toluol and benzol. A large number of the dyes suitable for coloring gasoline are soluble in benzol, a concentrated solution of which may be made and then measured portions of this solution used for imparting the desired color to a definite quantity of gasoline. The usual basis is to make the dye up in lots, each one being sufficient for a car and when cars of several different sizes are being loaded it is necessary to have corresponding lots of the dye prepared. When conditions permit the gasoline is colored while flowing into the shipping tanks.

Egloff, Morrell and Truesdell list 20 blue dyes, all of them soluble in benzol but only five soluble in gasoline. Those soluble in gasoline are: Oil Blue A.E., Oil Imported Blue, Alizarin Blue AS., Oil Blue MG., Gaso Blue No. 2,743. Three of these—Oil Imported Blue, Alizarin Blue AS., and Oil Blue MG.—are reported for solubility and stability when exposed as follows:

BLUE DYES FOR GASOLINE

	Penna. cracked gasoline			Calif. straightrun gasoline		
Dye—	Mgs. dye per 100 cc.	Lbs. per 1,000 bbls.	Per cent faded	Mgs. dye per 100 cc.	Lbs. per 1,000 bbls.	Per cent faded
Oil Imported Blue	0.60	2.10	0	0.40	1.40	0 d
Alizarin Blue AS.	.50	1.75	0	.40	1.40	75 d
Oil Blue MG.	1.00	3.50	0	.70	2.45	75 d

The exposure was 50 to 56 hours, total time including darkness, with about eight hours a day in sunlight during August and September. The color change is keyed as 0 for no change, and 100 for complete fading. The d indicates some deposit formed. It will be noted that pounds per 1,000 bbls. is about the quantity required for five standard tank cars.

We do not know of any objection to the coloring of gasoline that is to be used for motor fuel. It must be remembered that large quantities of dyes are used for coloring textile materials and could not be used if they were in any way corrosive. Further, the quantity required for coloring gasoline is so small that it could have no appreciable influence on reducing the power.

These authors state: "Gasoline is usually artificially colored for one of several reasons:

"1. To give it a distinctive appearance so that it can be readily identified and thus promote sales.

"2. To mask a yellowish or brownish tinge and hence improve the appearance of the gasoline in bowls of visible pumps.

"3. To 'neutralize' colored compounds, when they are present only in small amount, in order to give the gasoline the appearance of water whiteness.

"4. To cut the cost of refining, prevent loss of gasoline and preserve its knock rating."

S.A.E. NUMBERS REVISED

In your issue of April 16, 1931, you give the S.A.E. ratings of motor oils. I understand that the present ratings are as follows—(as listed below)—will you please give these as revised?—G. W. C.

The previous statement for S.A.E. numbers was based on the original adoption. The table as listed by G. W. C. follows:

S.A.E. No.	Viscosities Saybolt Universal Seconds at 100° F.	130° F.	210° F.
20	231/334	120/155	50/60
30	384/550	155/250	60/69
40	550/653	250/293	69/75
50	653/1,344	293/397	75/105
60	.....	.....	105/125
70	.....	.....	125/150

There is the additional grade of No. 10 having viscosities between 90-120 at 130° F. The S.A.E. table does not provide for a specification at 100° F., this will vary within wide ranges according to the source of the oil. The figures given above appear to those representing paraffin base oils. The corresponding mixed base or Mid-Continent equivalents at 100° F. for Nos. 30, 40 and 50 may be 400/600, 600/840 and 840/1,600. The addition of another grade, No. 70, should be noted.

The tentative specification of the Federal Specifications Board, April 16, 1931, show the following for Class D lubricating oils:

S.A.E. No.	Viscosity Secs. at 130°F. Not less than	Less than	Saybolt Universal at 210°F. Not less than	Less than
20	120	185	...	...
30	185	255	...	...
40	255	...	...	75
50	...	...	75	105
60	...	...	105	125
70	...	...	125	150

These limits are understood to be temporary, the final adoption will be as published in Technical Paper 323B, or the bulletin issued to replace it.

MIRANDO CRUDE ANALYSIS

If possible would you furnish analysis of Mirando crude oil, one of the heavy crude oils produced in Texas?—R. L. S.

The Mirando oil is produced in Southwest Texas. It is a heavy oil free from gasoline. The analysis available is based on an actual plant run.

Analysis of Mirando Crude

Physical Tests on Crude:	
Gravity, A.P.I.	21.0
Flash, C.O.C.	200° F.
Fire	220° F.
Viscosity @ 100° F.	91
Cold test	0 and flowing
Precipitation No.	.05

Plant Crude Distillation—Based on Month's Operation

Product:	Yield %
Gas oil	52.65
100 Dist.	.84
200 Dist.	.90
300 Dist.	1.54
500 Dist.	26.13
Heavy stock	11.54
Fuel—Bottoms	4.29
Loss	2.11
Total	100.00

This crude showing a 200° flash naturally contains neither gasoline nor kerosene in any commercial quantities.

GASOLINE PIPE LINE *in the World*

chooses CHAPMAN VALVES *for*

the entire project

FOR a high-pressure gasoline line, precision-made valves of absolute tightness are required. No chances can be taken with an inferior or unproven product. That's why Chapman Valves were chosen for the main line, pump stations and manifolds on the recently completed Great Lakes Line, the longest high pressure gasoline line in the world. Made of electric chrome tungsten steel and furnished for temperatures up to 1200 deg. F. and pressures to 1350 lbs., Chapman Valves are consistently specified for the industry's important projects.

Chapman Valves are distributed in the Mid-Continent and Gulf Coast territories by Taubman Supply Corp. serving The Chapman Valve Manufacturing Co., as factory representative. Chapman's problems of distribution being identical with all manufacturers marketing a single product, it was found expedient to depend upon a well-established sales organization thoroughly familiar with conditions in each field and one offering a broad outlet through strategically located stores.

The largest and most complete valve stocks ever carried in the Gulf Coast and Mid-Continent districts are available at Taubman's Houston and Tulsa stores, while regular stocks may be had at all times from the other ten Taubman branches.

In addition to Chapman Valves, Taubman Supply Corp. is factory representative for Republic Electric Weld Pipe, Pittsburgh Seamless products, Stockham Fittings and Edward Valves.

Taubman's Engineering Department, with a Chapman factory engineer in charge, is at your disposal for consultation relating to any pipe line, station or plant construction problem. All inquiries are handled promptly and held confidential.

As an added service Taubman maintains A.P.I. and standard pipe threading machines giving 24-hour service in all main branches.

Taubman Quality Service Taubman Quality Service

TAUBMAN SUPPLY CORPORATION

Supply Corp.

MID-CO BLDG., TULSA, OKLAHOMA

NEW MEXICO
HOBBS

KANSAS
WICHITA
McPHERSON
HUGOTON

REPUBLIC
ELECTRIC WELD
PIPE

Natural Gas Industry Developments

Means of Re-forming Natural Gas Aid to Operating Economies

Means and methods of re-forming natural gas and results obtained by the employment of different methods are discussed in Technical Paper 483, by W. W. Odell, recently published by the United States Bureau of Mines. By means of the re-forming process city gas can be manufactured at a low cost, or a higher value can be assigned to natural gas. A means is at hand for economically converting still-waste gases, produced during the refining of petroleum, into city gas.

For many years it has been realized that the art and theory of cracking hydrocarbon compounds have an important bearing on developments in the manufactured gas industry, says the author. In general, the theory is applied in the control of all gas-making processes in which gas suitable for city distribution is made. Its application has been more conspicuous in the generation of oil gas and carbureted water gas, although not unrecognized in the production of coal gas. The cracking and part cracking of natural gas heretofore have been of particular interest in one section of the country only —on the Pacific Coast.

In the past a number of California cities were supplied with both natural gas and gas oil at low prices, but because of the uncertainty of the supply of natural gas a method was developed whereby a standard quality of gas could be distributed using the natural gas available. The process consisted of making oil gas by cracking gas oil in checker chambers, cracking (partly cracking) natural gas in similar chambers, and mixing the two gases and an additional amount of natural gas in predetermined proportions to keep the weight per cubic foot and heating value within specified limits. During a portion of the year and when prices were favorable, gas oil was not used; the

(Continued on Page 174)

GAS NOT CHEAP ENOUGH TO DISPLACE MUCH COAL

CHICAGO, May 2.—Transportation costs from the gas fields in the Southwest preclude the possibility that gas will become such a "cheap" fuel as to displace much coal, Samuel Insull, Jr., told employes of the Peoples Gas, Light & Coke Co.

Pointing out the importance of the coal industry to the welfare of Illinois, Mr. Insull said that it is neither possible nor desirable to attempt to displace it. "If we take the cost of the gas in Texas, as nearly as we can guess it, and add the cost of bringing it to Chicago—which we cannot guess, but which we know will be very high—that gas, when it gets here, will have cost so much that it cannot all be sold at a sufficiently low price to displace all other fuel," he said.

He emphasized that gas is a quality fuel, and will be used only where its qualities of cleanliness, easy temperature control, no-shoveling, or suitability for special industrial processes make it worth the higher cost to the consumer. The householder who heats his home with gas will derive the greatest advantage, he predicted.

GUTHRIE GAS SYSTEM

Western Service Corp., which was recently awarded the natural gas franchise at Guthrie, Okla., is starting work on the gas system for the Logan County capital city. The job must be completed and gas being delivered to consumers within 45 days from April 21.

NATURAL GAS PRODUCING AREAS IN EIGHT TENNESSEE COUNTIES

By Willard F. Bailey
Tennessee Division of Geology, Nashville*

Numerous recent requests at the Tennessee Division of Geology for general information concerning natural gas producing areas in Tennessee have occasioned the preparation of this brief summary for publication. The more important facts regarding the occurrence, production and utilization of natural gas in the several producing areas in Tennessee are here listed in condensed form.

1. Smithland Field, Lincoln County—Number of producing wells, 14; maximum initial volume, reported, 3,253,000 feet; average initial production, 200,000 feet; average initial rock pressure, 75 to 100 pounds per square inch; depth of production, 75 to 700 feet; producing horizon, fissured Ordovician (Trenton) limestone; owner of wells, United Light & Power Co., J. W. Young, Fayetteville, Tenn., trustee; distributor, Fayetteville Natural Gas Co.; field is connected by 12 miles of 4-inch pipe line to distributing system at Fayetteville, Tenn.; area is included in a geologic structure map, surveyed by Tennessee Division of Geology, 1930.

2. Warren County Field—Number of producing wells, 8 or 9; maxium initial volume, reported, 786,000 feet; average initial volume, reported, 40,000 feet; average initial rock pressure, 30 to 40 pounds per square inch; depth of production 300 to 800 feet; producing horizon, fissured Ordovician (Trenton) limestone; owner of wells, Walker Oil & Gas Co., A. V. Walker, McMinnville, Tenn., president; distributor, McMinnville Gas & Heating Co.; volume of gas used in McMinnville during 1930, reported, 9,635,000 feet; field is connected by about 10 miles of 2-inch pipe line to distributing system at McMinnville, Tenn.; area is included in United States Geological Survey Folio No. 22, McMinnville Quadrangle, Geologic and Topographic Map, 1895.

3. Harpeth Valley Field, Dickson County—Number of wells in area, 4 or 5; maximum initial volume, reported, 100,000 feet; rock pressure, weak; depth of production, 200 to 300 feet; producing horizon, fissured Ordovician (Trenton) limestone; owners, local parties from Dickson and White Bluff, Tenn.; wells capped, awaiting further development; area is included in Pegram Quadrangle, United States Geological Survey topographic map in preparation, 1931.

4. Long Fork Creek, Macon County—One well, located on Long Fork Creek, eastern Macon County; initial volume, reported better than 1,000,000 feet; rock pressure sufficient to blow string of cable tools from hole on several occasions; depth of production, 200 to 600 feet; producing horizon, fissured Ordovician (Trenton) limestone; owner, Missouri-Kansas Gas Co.; well capped.

5. Sparta Field, White County—Two wells, located 3½ miles north of Sparta, Tenn.; volume of both wells reported about 3,000,000 feet; rock pressure, re-

(Continued on Page 173)

*With permission of the state geologist.

OHIO COMMISSION CAN OBTAIN OUTSIDE RECORDS

COLUMBUS, Ohio, May 2.—The Columbus Gas & Fuel Co. has been ordered by the Public Utilities Commission to file a certified copy of the record of the Public Service Commission of West Virginia, including specifically the inventory and appraisal of the United Fuel Gas Co. of West Virginia, in the case of an investigation of the rates of the latter company.

The order was issued on motion of the city of Columbus in a case pending before the Ohio Commission, in which the Columbus utility is seeking an increase in gas rates. The company opposed the motion, contending that the commission has no authority to go outside the State in its investigation of rates.

The Columbus Gas & Fuel Co. and the United Fuel Gas Co. are subsidiaries of the Columbia Gas & Electric Corp. of New York, and the gas supply of the Columbus company is furnished by the United from the West Virginia fields.

The commission by its present order holds that it has authority to investigate properties and costs affecting the production and transmission of gas to Columbus, regardless of where the property is located. The case will be resumed on June 8, the commission announced.

The city of Columbus also asked that an allocation be made showing what part of the property of the Ohio Fuel Gas Co. is used exclusively to pipe gas into Columbus. This company also is a subsidiary of the New York holding corporation. The commission has not ruled upon this request.

The order of the West Virginia Public Service Commission in the case of the United Fuel Gas Co. authorized an increase in gas rates. On appeal to the Supreme Court of West Virginia the order was set aside.

CANADIAN GAS PAPERS

Among the papers to be presented at the twenty-fourth annual convention of the Canadian Gas Association, to be held at Montreal, Canada, on Thursday and Friday, June 4 and 5, are: "Gas Prospects in the Prairie Provinces of Canada," by Dr. George S. Hume, geologist, Department of Geological Survey, Ottawa, Ontario; "Modern Trends in Gas Engineering," by E. A. Munyan, manager, gas department, Union Gas & Electric Co., Cincinnati; "Progress in the Development of Major Long Distance Transmission Lines," by W. G. von Gemmingen, consulting engineer, New York City, and "Natural Gas in Ontario," by R. B. Harkness, Commissioner Natural Gas, Province of Ontario, Toronto.

MEDICINE HAT GAS PROJECT

CHATHAM, Ontario, May 2.—Burgesses of the city of Medicine Hat, Alberta, have approved a by-law authorizing the issue of debentures for $82,500 to finance development and extension of the Medicine Hat municipal gas field. The new well recently completed some miles northeast of the old field is reported making close to 3,000,000 feet a day; and it is planned to continue the testing of possible new extensions of the field. Government geologists and local engineers have suggested a number of locations to be tested and present plans call for drilling two additional wells.

ALBERTA RATE CASE

CHATHAM, Ontario, May 2.—Application is being made by the cities of Calgary and Lethbridge to the Alberta Public Utilities Commission for a reduction in the natural gas rates at present charged by the Canadian Western Natural Gas, Light, Heat & Power Co.

FORT WORTH SITUATION FURTHER COMPLICATED

FORT WORTH, Tex., May 4.—Negotiations for gas to supply a municipal distribution system in Fort Worth are delayed while attorneys study copies of the LaTex Gas Co.'s Fort Worth franchise to determine whether municipal ownership would entail severance damages.

The city plans to condemn the local distribution system of the LaTex company as well as that of the Fort Worth Gas Co., and it was pointed out at a meeting of the city council this may result in severance damage to the LaTex. Severance damage is caused by acquisition of a part of a property, rendering worthless or lessening the value of the part not acquired.

The council's session primarily was for study of a contract offered by the Shamrock Natural Gas Co. Copies of the franchise of the Magnolia Petroleum Co. and its transfer to the LaTex concern were given to the Shamrock company to submit the question for a legal opinion. The council also considered a contract offered by L. A. Pettit, Jr., of Kansas City, backed by Stern Brothers & Co., Kansas City, and a telegram from a New York syndicate, represented by J. G. Pundt, which stated that engineers are still working on a report of the municipal ownership setup. It did not commit the bankers to the proposition for supplying the city with gas in the event of municipal ownership.

The Lone Star Gas Co., of which the Fort Worth Gas Co. is a subsidiary, has indicated it may seek severance damage in the event of condemnation of the company's properties. The Lone Star sells gas to the distributing company.

The LaTex franchise will expire in 1939. Its largest customer is the electric power company. Two condemnation suits would be necessary, one for acquisition of the Fort Worth Gas Co.'s properties and the other for acquisition of the LaTex' properties.

EXPORT PERMIT REFUSED

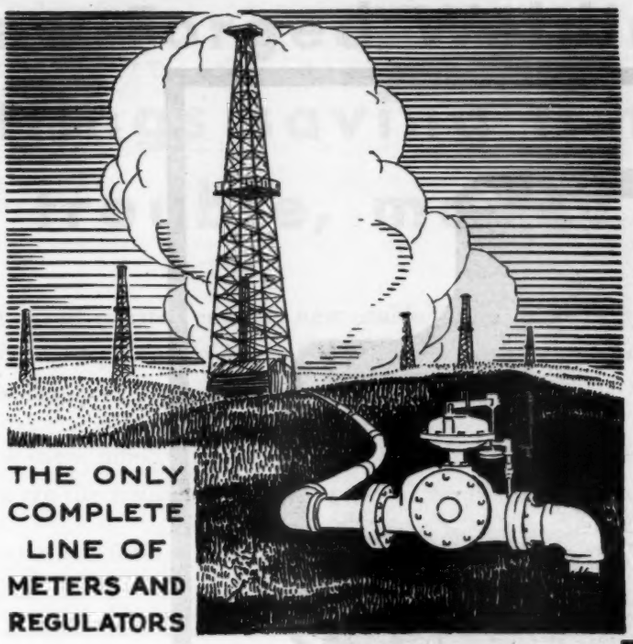
CHATHAM, Ontario, May 2.—The Alberta provincial government has refused the application of Tri-Cities Utilities, Ltd., of Regina, headed by C. O. Moore of New York, for permission to construct a pipe line from the Kinsella Field to the Saskatchewan boundary for the purpose of exporting natural gas to Saskatchewan. Application was made in January under the Pipe Lines Act, at which time the government reserved its decision. Tri-Cities Utilities, Ltd., had at the time negotiated tentative franchises for the cities of Regina and Saskotoon; but these were defeated by the burgesses, and this is given as one of the reasons for refusing the application. The government suggests that in further negotiations for Saskatchewan franchises the waste gas of the Turner Valley should be given first consideration, and that if new conditions arise at any time, a new application will be considered.

PLANNING NEW LINE

The Lone Star Gas Co., of Dallas, Tex., is reported making plans for a survey for a pipe line from the Quinton gas field in Pittsburg County, Oklahoma, to points in Texas.

CANADIAN MERGER IS DENIED

CHATHAM, Ontario, May 2.—Reports of a contemplated merger of the Dominion Natural Gas Co. and Union Natural Gas Co. interests in southwestern Ontario are denied by officials of the former company.



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It is never necessary to remove EMCO Regulators from the line to make adjustments or repairs.

By removing the outer cover and the valve box hand hole plate, the valves, valve seats and valve stem can be readily inspected. If it is necessary to replace these parts, it is a simple matter to remove the valve box and make repairs or replacements, without in any way affecting the regulator connections. This removable valve box is an exclusive EMCO feature.

All parts of these regulators are interchangeable, making it possible to have complete assemblies on hand thus eliminating unnecessary delays and expense.

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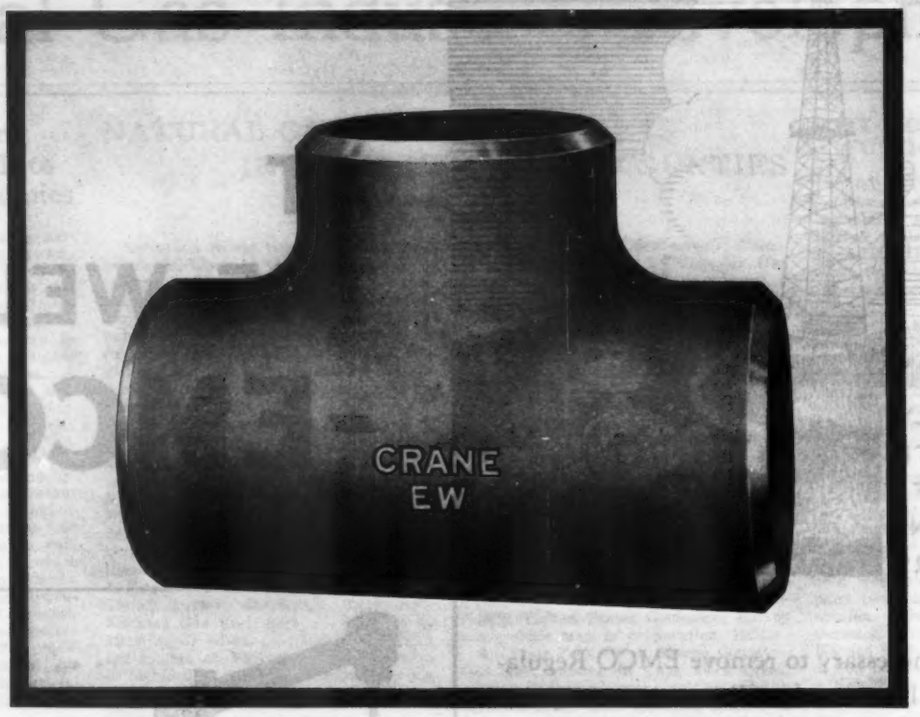
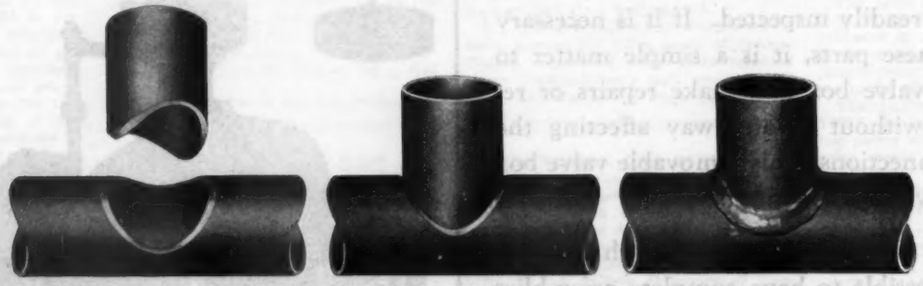


The new way. Crane Forged Welded Tee No. 353-E. Easily and quickly installed anywhere, regardless of cramped quarters.



The old way. Much troublesome cutting and fitting is necessary in making a branch connection like this. The new Crane way above eliminates much of it. Time, trouble, and money are saved. The completed joint is neater and better.

CRA

PIPING MATERIALS TO CONVEY AND CONTROL
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New Forged Welding Fittings saving time, trouble, money

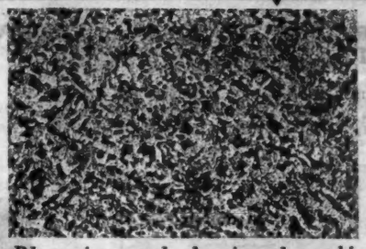
Two years of research and tests now enable Crane Co. to offer the oil and gas industry two new lines of forged welding steel fittings possessing advantages of general shape and design found in cast steel fittings.

One of these lines, fittings 2½ inches or smaller, is seamless. The elbows are the result of a new process of forming steel tubing.

The other, of fittings 3 to 10 inches, is made by blanking the two halves of the fittings separately and welding them together in a specially designed resistance electric welding machine. Open hearth steel plate is used, thoroughly annealed, carefully sand-blasted to remove all scale, and excess metal squeezed out in the welding process carefully removed. As a final step, ends are beveled for welding or grooved for clamp joints and each fitting exactly tested.

Result: fittings exceptionally rugged; lighter in weight than cast steel would be; of a metal unusually dense, free from sponginess, and with a tensile strength of 55,850 pounds to the square inch. Metal sections are uniform in thickness and truly circular. No sharp corners cause undue friction or pressure drop.

Tees and elbows in these new lines are offered for 250 pounds steam or hot oil working pressures at temperatures to 750°F.; 325 pounds boiler feed; 800 pounds non-shock oil, gas, water, or air at atmospheric temperatures. Various combinations meet virtually every requirement in a standard weight piping installation. Write us for circular No. 236 describing these new materials in full.

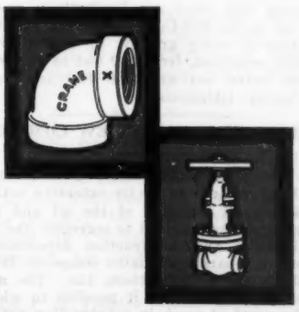


Photomicrograph showing the weld between halves of a Crane forged welded fitting. Arrow indicates the strong, almost indiscernable bond.

New way. Crane Forged Welded Elbow No. 352-E. Tangent on each end of each fitting lines up pipe before welding.

Old way. 90° bend.

N E



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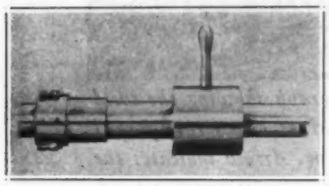
VICTOR VALVE SEAT TAP PUT ON SALE BY LANDIS

The Landis Machine Co., Inc., Waynesboro, Pa., has placed on the market a unique tap for tapping the valve seat



ring threads in gate valves. These threads long have been a source of worry to the manufacturers of this type of valve owing to the fact that the major diameters of the threads are greater than the port openings.

The Victor valve seat tap is fitted with double ended chasers, one end for each of the two valve seat ring threads. Its construction is such that the chasers, when collapsed will clear the port openings. The chasers are expanded to the cutting position by means of a handle provided for that purpose after the tap has entered the valve body through one of the port openings.

The two threads are tapped with the same chasers in one chucking. The tap is suitable for valves with either parallel or angle seats. Valves with angle seats require a fixture of the trunnion type with stops for bringing the valve seat ring openings in line with the tap.

SHOT POURED DOWN INTO TUBING FORMS A PACKER

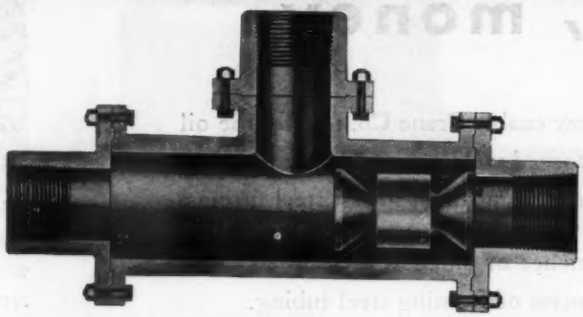
The American Iron & Machine Works Co. of Oklahoma City, Okla., has put on the market the "American shot barrel," which it says embodies new details that promise higher efficiency and lower lifting costs. It is asserted that floating sand will not affect it and that temperature at the bottom of the well will not affect its operation. There are no cups. The lead shot used to repack the barrel is poured down the tubing to be mashed into the space between traveling valve and barrel walls and there form a packer.

The barrels are made for 2, 2½ and 3-inch tubing, upset or regular, and are classified as 6, 8 and 10-foot barrels, although they are longer than classified. The manufacturers recommend the 6-foot barrels for wells to the depth of 2,400 feet, 8-foot for 4,500-foot wells and 10-foot for wells 6,000 feet deep. They state that there are hundreds in operation in the Mid-Continent Field, pumping fluid of every gravity, in almost every well condition, from 900 feet to the deepest barrel set at 6,130 feet in Logan County, Oklahoma.

HOPE ORGANIZES NEW COMPANY

The Hope Engineering Co., Mt. Vernon, Ohio, on account of its extensive activities in all branches of the oil and gas industry, has decided to segregate the engineering and construction departments into a separate affiliated company, Hope Engineers & Contractors, Inc. The new company will make it possible to widen the scope of work in construction activities in the oil and gas industry. The officers are: R. S. Lord, president; R. B. Lloyd, W. B. Jennings and D. W. Patterson, vice presidents; W. P. Lord, treasurer, and T. B. Hall, secretary. All phases of the Hope's activities will still be managed by the present company, the same as in the past.

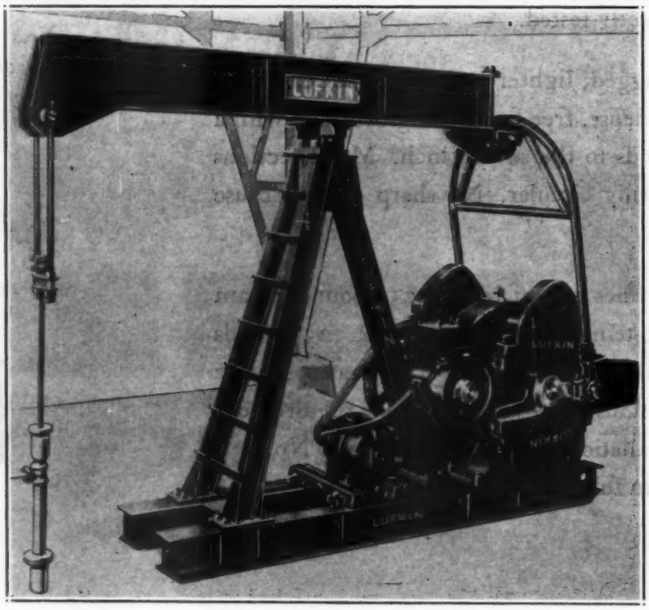
IMPROVED TYPE MANIFOLD VALVE OFFERED BY BRAUER



The Brauer Machine & Supply Co., of Oklahoma City, Okla., is offering an improved type manifold valve in addition to its other valves. Features of this valve are the new double cup plunger and flat face valve seats, designed to eliminate trouble with the plunger sticking and doing away with the necessity of any additional packing means.

The plunger is of molded rubber around a steel core. This permits a metal-to-metal seat with a rubber seal against a flat face valve seat. The fluid pressure exerted against the plunger cup makes a seal against the cylindrical bore of the valve and prevents sand working around the plunger causing it to stick.

TWIN-CRANK PUMPING UNIT IS ANNOUNCED BY LUFKIN



The Lufkin Foundry & Machine Co., Lufkin, Tex., announces the manufacture of its twin-crank pumping unit assembly, which, complete in detail from prime mover to polish rod hanger, is mounted upon a rigid, reinforced, structural steel bed plate, and fulfills a need for a portable, economically installed and operated unit for wells of medium depth.

The unit is equipped with Sykes herringbone continuous tooth gearing (oil-bath lubrication) having Hyatt equipped pinion shaft and bronze gear bearings. Equipped with Lufkin-Trout counterbalanced cranks on either side of the gear box, all "winding" or "weaving" is said to be eliminated, and additional effective counterbalancing is provided.

The twin-pitman is of reinforced bent-pipe construction equipped with a universal ball-joint connection to beam which allows for any misalignment and insures equal pull for each crank. Trout universal dust-proof, oil-bath (box on pin) pitman connection are regular equipment with the new unit. An adjustable stroke length, the maximum of which is 42 inches, and a stroke speed of 15 to 28 strokes per minute is obtainable.

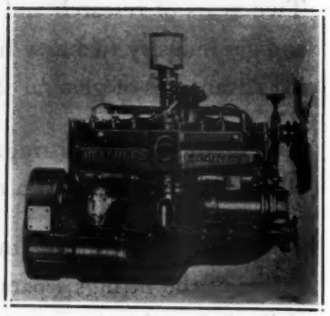
The samson post of rigid tripod design is bolted to the bed plate with two legs forming a ladder and one a support, the whole providing ample rigidity and strength for the walking beam, which is of the I-beam type equipped with center-line connections or "mule head" for straight line pumping.

The new unit is designed to operate with either electric motor or gas engine drive and is furnished complete with belt and motor house. Fuller details may be obtained upon request from the company.

The E. J. Longyear Co., of Minneapolis, Minn., and Canadian Longyear, Ltd., of North Bay, Ontario, have made Austin Hoy & Co., Ltd., Bush House, London, W.C.2, their European distributors. This new connection will make available from London stock Longyear diamond core drills and diamond drill supplies.

BUILT FOR HEAVY DUTY BUT STAND HIGH SPEED

The Hercules Motors Corp., Canton, Ohio, is offering an additional line of heavy duty, six-cylinder L head engines



Manifold Side

designated as the JX series, available in three sizes, as follows:

Model	Bore	Stroke	Displacement
JXA	3⅜	4¼	228 cu. in.
JXB	3⅝	4¼	263 cu. in.
JXC	3¾	4¼	282 cu. in.

The three engines differ only with respect to the bore and such parts and performance ability as are thus affected. While the JX series is a strictly heavy-duty line, all sizes are designed to withstand the stresses of high-speed operation. Utmost simplicity is an outstanding feature. The six-cylinder motors are companion models to the OO series of four-cylinder engines. Many of the parts are interchangeable.

The crankcase is cast integrally with the cylinder block, assuring rigidity and permanent alignment of bearings. The crankshaft is supported by seven main bearings, all 2½ inches in diameter. The total projected area of these bearings is 27 square inches—a high ratio of displacement to bearing area which reduces pressure per square inch of bearing, and combined with efficient lubrication, makes for long bearing life. Cylinders are cast on bloc with detachable head.

Connecting rods are drop-forged. The bearing material is cast into the rod as well as in the drop-forged caps, and the caps are held by special heat-treated bolts.

Lubrication is by gear pump of large capacity providing full pressure to all main and connecting rod bearings. The gear train is pressure-lubricated through a bleeder from the main pressure lines. The oil pump circulates 1.4 gallons per minute at 100 r.p.m. The high pressure centrifugal pump circulates a large volume of water through unrestricted passages directly to the exhaust valve area. Fan drive is arranged with V belt.

The JX series sixes can be arranged for either downdraft or updraft intake manifolds. Exhaust manifolds of either center or rear outlet type to meet best the installation requirements are also optional. These engines are available for either three or four-point suspension and are offered with either Nos. 3, 4 or 5 SAE bellhousing. Provisions are made for an SAE No. 1 flange type generator and starting motor, and the ignition distributor, driven through gears on the accessory shaft, is mounted on the water pump side.

The horsepower and torque ability of all engines in the series make them especially suited for uses where low speed torque and at times rather high engine speed performance are necessary. Such uses embrace general industrial and oil field applications, including pump and generator drives. As regularly supplied, the horsepower of all three sizes peaks at between 3,000 and 3,100 r.p.m.

Personal Paragraphs About Oil Men

E. G. Woodruff, consulting geologist, has returned to his Tulsa office after an extended stay in the East Texas areas.

* * *

Alexander Duckham, chairman of Trinidad Central Oilfields, Ltd., has returned to London after a several weeks' visit to Trinidad.

* * *

W. R. Ealine, of the Sheldon-Burden Company, of Canada, spent several days in Houston, Tex., visiting offices of the Sheldon Machinery Company.

* * *

K. S. Adams, assistant treasurer of Phillips Petroleum Company at Bartlesville, Okla., has recovered from an attack of illness and has returned to work.

* * *

M. B. Henie, of the purchasing department of Phillips Petroleum Company, is the father of a baby girl, both mother and daughter, "Mary Jane," are doing fine.

* * *

Dr. Hans Stille, professor of geology and paleontology of the University of Gottingen, Germany, is in the Gulf Coastal region making an investigation of the salt dome areas.

* * *

Max Fuhrman, president of the Fuhrman Petroleum Company of Okmulgee, Okla., returned home during the week from a six months' trip to Europe, in the interest of his health.

* * *

Stanley Winter visited his parents in Casper, Wyo., Judge and Mrs. Charles E. Winter, recently. He has been doing geological and lease work for the Ohio Oil Company in Nebraska.

* * *

Bart Myers, general superintendent of the Tropical Oil Company, Cartagena, Venezuela, South America, is in the United States visiting with his daughter in the Seminole, Oklahoma, Field.

* * *

A. A. Holland, formerly vice president in charge of operations of Lago Oil & Transport Company in Venezuela, is now president of the General Natural Gas Corporation, in West Virginia and Pennsylvania.

* * *

T. C. Skeen, executive with the Columbian Steel Tank Company, Kansas City, Mo., is spending a few days at his home in St. Louis, Mo., after several weeks in the East Texas fields. He returned to St. Louis via Oklahoma and Kansas City, Mo.

* * *

Mr. and Mrs. D. W. Weathers and Minal E. Young, all of Casper, Wyo., have left by motor for Las Vegas, Nev. Mr. Young expects to go to Chicago where he will be joined by Mrs. Young and will spend some time in Los Angeles, Calif.

* * *

Rex Beach, representing a group of eastern capitalists, has recently opened offices in the Gulf Building, Houston, Tex., and is engaged in the drilling of a wildcat in Nacogdoches County, where his interests have acquired extensive holdings.

* * *

H. H. Greenfield, who recently resigned his position as agent-general of Alberta in London, has returned to Calgary. He is vice president of Anglo-Western Oils, Ltd., and will take an active part in organizing that company's development program.

* * *

E. Howard H. Roth, Buffalo, N. Y., was elected to the board of directors of the Appalachian Gas Corporation, and the following directors were re-elected: J. B. Bell, Paul Herold, H. J. Herrlich, Frank R. Hurlburtt, Birger L. Johnson and H. G. Scott.

* * *

Robert Darney, in the production department of the Stanolind Oil & Gas Company, has returned to Tulsa after supervising the drilling of the company's deep test in Irion County, West Texas. Previous to being sent to West Texas, Mr. Darney was located in Michigan for the company.

Jon P. Long, president of the Petroleum Equipment Company, Fort Worth, Tex., was in Tulsa last week.

* * *

R. D. Wallace, of Casper, Wyo., head of the land department of the Prairie Oil & Gas Company, has gone to Chicago on company business.

* * *

R. L. Melton, manager of sales in the Mid-Continent oil fields for the Granger Indicator Company of Los Angeles, Calif., was in Tulsa recently.

* * *

Harry Lackey of the Oil Well Improvements Company, is back to work after an operation for appendicitis four weeks ago at St. Johns Hospital, Tulsa.

* * *

D. J. Wolff, of Bartlesville, Okla., geologist for the Phillips Petroleum Company, is in Lusk, Wyo., making his headquarters while his company is core drilling the Middle Creek structure, north of Manville, Wyo.

* * *

R. C. Duvall was in Casper, Wyo., on his way from northern Montana to Eastland, Tex., where he will join his associate, C. L. Thompson. Mr. Duvall was looking after a wildcat operation on the Cherry Ridge structure in Blaine County, Montana.

Men of the Industry

Wesley D. Martin

Wesley D. Martin, head of the service department of the Arkansas Natural Gas Corporation, has been with the Cities Service Company interests 12 years. Born in Lima, Ohio, Mr. Martin was reared and educated in his native state. Moving to Oklahoma in 1907, he worked in the oil fields until June, 1909, when he joined the Bartlesville Zinc Company, where he was employed as assistant purchasing agent and assistant to the plant auditor. In 1918, Mr. Martin first began his work with Cities Service when he became traveling auditor of the Empire Companies.

From that time he advanced rapidly. He became auditor of disbursements and receipts, building manager, office manager of the securities department and then went to the Kansas City office of Henry L. Doherty & Company as assistant to western division manager. After this he was made district manager of the securities office of Henry L. Doherty & Company. He became associated with the Arkansas Natural in July, 1929.

F. C. Greene, formerly a geologist with the Shell Petroleum Corporation, has returned from a business trip to Princeton, Ind.

* * *

Dodds Ireton Buchannan is the name of a new son in the home of George S. Buchannan, Tulsa, geologist for the Tulsa Oil Company.

* * *

John Meyers, of the American Hammered Piston Ring Company, Baltimore, Md., is on a trip through the Southwest. He stopped in Tulsa for a few days.

* * *

L. P. Hammond, independent oil producer of Wichita Falls, Tex., injured in an automobile accident, is recovering at a Wichita Falls hospital.

* * *

George B. Morris, president of the Bradford Motor Works, Bradford, Pa., is making a tour of the Mid-Continent Field, accompanied by sales representatives.

* * *

W. L. Connelly, vice president of the Sinclair Consolidated Oil Company, was visiting in Tulsa during the week, and left to inspect the company's properties in Texas.

* * *

E. C. Lufkin has resigned as a director of The Texas Corporation and The Texas Company, and R. Ogarrio, vice president in charge of production, was elected to succeed him.

* * *

H. W. Richards, Mid-Continent representative of the Mine Safety Appliances Company, drove to St. Louis, Mo., and attended the sessions of the Central States section of the National Safety Council.

* * *

James C. Templeton, accompanied by Dr. S. Papp, chief geologist, of the International Geophysical Prospecting Company, Ltd., is going to Canada for the purpose of making geological and geophysical investigations.

* * *

C. E. Reynolds, of Okmulgee, Okla., oil producer and drilling contractor, who has been operating in the Oklahoma City Field, has moved his headquarters from that city to Okmulgee and has transferred his operations to the East Texas Field.

* * *

E. B. Wiggins, president of the E. B. Wiggins Oil Tool Company, has left Los Angeles, Calif., on a business trip to New York. He expects to remain there about two weeks. Mrs. Wiggins accompanied her husband on the trip.

* * *

James Hutchinson, vice president and general manager of the Rio Bravo Oil Company, Houston, Tex., who has been confined to the hospital the past six weeks, is reported improving and possibly will be at his desk within the next few weeks.

* * *

O. D. Donnell, of Findlay, Ohio, president of the Ohio Oil Company, with R. J. Berry, president of the Mid-Kansas Oil & Gas Company, were recent visitors in Tulsa, en route home from a trip to East Texas, with W. W. Fleming of Tulsa, vice president and general manager of the Mid-Kansas company.

* * *

Robert Stoner, manager of the gasoline department for the Standard Oil Company of New York in the Dutch East Indies, is spending a week or 10 days in the Mid-Continent Field in the interests of his company. Mr. Stoner was formerly with the Standard Oil Company of Louisiana and still calls Shreveport, La., home.

* * *

L. J. Daly, of Denver, Colo., superintendent of production in the Rocky Mountain region for the Texas Production Company, and K. D. Pardee, of Billings, Mont., superintendent of operations in the northern division, visited the company's wildcat at Alkali Butte in Fremont County, Wyoming, recently and continued north to inspect holdings at Oregon Basin and in Montana.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 46)

Ben Merritt tr.'s No. 1 Wallums, NE cor. SW SW, Sec. 29-13-12 ..... Began Apr. 28; set 12½-in. 50 ft; drlg. 300 ft.

E. T. Oakes' No. 1 R. H. Bryant et al, 200 ft. N and W, SE cor. NE NW, Sec. 30-12-15 ..... Rigging up.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 26-9-10 ..... T.A. 4,091 ft.

J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 35-11-10 .. S.D. 3,156 ft.

Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10 .. S.D. 1,518 ft.

C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10 ..... Tested dry; S.D. 1,380 ft.

RED RIVER PARISH

La. Oil & Dev. Co.'s No. 2 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-13-11 ..... Spudded in; S.D. 50 ft.

Lucky Strike Oil Co.'s No. 1 Chaffraix, 200 ft. S, 300 ft. E, C, Sec. 32-12-10 ..... T.A. 3,010 ft.

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5 ..... Derrick.

Southern Carbon Co.'s No. 1 Rosengraut & Ducomb, 2,-660 ft. E, 660 ft. S, NW cor., Sec. 24-17-5 ..... Drlg. 2,400 ft.

Southern Carbon Co.'s No. 2 Rosengraut & Ducomb, 1,-980 ft. N, 660 ft. E, SW cor., Sec. 19-17-6 ..... Location.

Southern Carbon Co.'s No. 3 Rosengraut & Ducomb, 660 ft. S and E, NW cor., Sec. 30-17-6 ..... Location.

Southern Carbon Co.'s No. 1-B C. M. Noble, 2,966 ft. N., 1,525 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 37-15-6 .. Location.

United Gas Public Service Corp.'s No. 3 Earle, NE cor., Sec. 25-17-5 ..... 42,804,000 ft. gas 2,430 ft.

United Gas Public Service Corp.'s No. 4 Earle, SE cor., Sec. 1-16-5e ..... Tested 3,000,000 ft. gas 2,479 ft.

SABINE PARISH

Durham Oil Co.'s No. 1 Polly (was Davis et al's), NE cor. NE NE, Sec. 18-8-12 (was Stacy et al's) ..... S.D. 2,722 ft.

Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11 ..... S.D. 105 ft.

R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 300 ft. W, NE cor. NW NW, Sec. 10-8-13 ..... Drlg. 2,190 ft.

Lacey Prod. Co.'s No. 1 Cooper, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 30-8-11 ..... W.O.S.R; T.D. 2,620 ft.

Lide et al's No. 1 Ponder, 990 ft. N, 990 ft. W, C, Sec. 15-7-11 ..... W.O.S.R. 2,300 ft.

Lide et al's No. 2 Ponder, 200 ft. S, 200 ft. E, NW cor. NE NW, Sec. 15-7-11 ..... S.D. 2,520 ft.

Jean Longoria's No. 1 Belton (no check), Sec. 31-9-13 .... S.D. 1,400 ft.

Packard O. & G. Co.'s No. 1 Smith (was Caddo-Sabine Synd.'s), Sec. 8-7-10 ..... Dry and abd. 2,882 ft.

H. W. Perritt's No. 4 Bowman-Hicks, SE cor. SE NE, Sec. 2-7-12 ..... Location.

H. W. Perritt's No. 1 Boring, NW cor. NW NW, Sec. 11-7-12 ..... Tested dry 2,355 ft.; drlg. 2,442 ft.

Sabine Royalties Co.'s No. 1 Skinner, SW NW, Sec. 5-8-11. Rigging up.

Stovall Drlg. Co.'s No. 1 Nulton, SE cor. NW NE, Sec. 1-7-12 ..... Location.

A. H. Thames' No. 1 Edward est., 150 ft. NW SE cor. NE SE, Sec. 8-8-12 ..... S.D. for water 1,200 ft.

John Woodley's No. 1 Sabine Lbr. Co., 400 ft. S, 330 ft. W, NE cor. SE, Sec. 12-8-12 ..... Cmtd. 6⅝-in. csg. 2,310 ft.

TENSAS PARISH

A. R. Willis et al's No. 1 Curry, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ..... Fishing for D.S. 3,475 ft.

UNION PARISH

Fred A. Green's No. 1 U. S. Govt., 660 ft. N, 1,980 ft. W, SE cor. NE, Sec. 26-20-3e ..... Set 6-in. at 2,079 ft.

Nemours Corp.'s No. 1 Pace-Hamby, 660 ft. NE of SW cor., Sec. 35-22-3e ..... 2,218,000 ft. gas 2,188 ft.

VERNON PARISH

Weir & Smith's No. 1 Delta Land Co., 200 ft. S and W, NE cor., Sec. 14-2-11 ..... Dry and abd. 4,583 ft.

WEBSTER PARISH

Coyle tr.'s No. 1 Frazer, 200 ft. N, 200 ft. E, SW cor. NE SE, Sec. 27-23-11 ..... Derrick.

Red Hawk Oil Co.'s No. 1 Mathews, 330 ft. N, 330 ft. E, C, Sec. 11-23-9 ..... Arranging to set 6-in. 2,782 ft.

WEST CARROLL PARISH

United Gas Public Service Co.'s No. 1 Pioneer Cooperage, 463 ft. E, 3,954 ft. S, NW cor., Sec. 29-21-3 ..... Began Apr. 24; Set 6-in. 167 ft.

ARKANSAS

CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E, C, Sec. 21-23-3 ..... T.A. 2,925 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C NW SE, Sec. 4-20-5 ..... S.D; clearing titles 1,214 ft.

CLEBURNE COUNTY
(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 32-11-9 ..... S.D. 3,740 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 330 ft. E, 40 ft. S, NW cor. SE NE, Sec. 20-10-13 ..... S.D; W.O. 2,846 ft.

J. H. James tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NW NE, Sec. 11-9-15 ..... Cored white sand 2,505-10 ft.; will make D.S. test.

GARLAND COUNTY
(Cable tools)

Givins et al's No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-3-19 ..... 1,300 ft. 5 3/16-in. in hole T.A. 3,-756 ft.

GRANT COUNTY

Spann & McClung's No. 1 Sarah Page, 660 ft. W, 660 ft. S, NE cor. NW, Sec. 3-3-12 ..... S.D; W.O; soft sand 1,024 ft.

HOT SPRINGS COUNTY

John Watkins' No. 1 Cunningham (was J. R. Lockhart's), 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16 .... S.D. for funds 220 ft.

LAFAYETTE COUNTY

McIlver et al's No. 1 Hattie, NW cor. NE, Sec. 1-20-6 .... T.A.

Smitherman & McDonald's No. 1 Reed, 200 ft. N, 200 ft. W, SE cor. NW NW, Sec. 16-15-22 ..... Setting 6⅝-in. packer 1,198 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29 ..... Location.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26 ..... S.D; W.O. 3,570 ft.

MILLER COUNTY

Bullock Oil Co.'s No. 1 Hervey, SE NE, Sec. 33-14-26 ... Abd. 2,813 ft.

East Texas O. & G. Co.'s No. 1 Harvey, 500 ft. E, 300 ft. S, NW cor., Sec. 2-15-26 ..... T.A. 910 ft.

E. & F. Oil Co.'s No. 1 E. L. Beck, 200 ft. S, 200 ft. E, NW cor. SW, Sec. 36-15-26 ..... T.A. 2,968 ft.

Fitzwater et al's No. 1 Beck, 200 ft. N, 200 ft. W, SE cor. SW SE, Sec. 33-15-26 ..... T.A. 93 ft.

Gusher Bend Oil Co.'s No. 1 Adams, 120 ft. S, 800 ft. W, NE cor. NW, Sec. 26-14-26 ..... S.D. 2,635 ft.

J. D. McRae's No. 1 Smith, 150 ft. N, 150 ft. W, SE cor., Sec. 28-15-26 ..... Derrick.

OUACHITA COUNTY

Copenhaven et al's No. 1 Elliott, Sec. 11-15-17 ..... Bailed dry 2,210 ft; S.D; W.O.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14 ..... S.D; W.O. 2,946 ft.

E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24 ..... Derrick.

POPE COUNTY

Ark.-La. P. L. Co.'s No. 1 Baird, 760 ft. S, 660 ft. E, NW cor., Sec. 11-7-20 ..... Drlg. shale 3,610 ft.

Ark.-La. P. L. Co.'s No. 2 McFaddin, 685 ft. N, 485 ft. W, SE cor. NE SW, Sec. 15-9-21 ..... C.O. cave-in; T.D. 4,356 ft.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26 ..... Fishing for bit; cor. T.D. 1,436 ft.

Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29 ..... S.D; waiting on csg. 1,860 ft.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N, 330 ft. E, SW cor. NE SW, Sec. 3-18-13 ..... 600 ft. fluid 30% S.W. in hole; T.A. 3,570 ft.

Wilson & Chapman's No. 1 N. Parker, 330 ft. S and W, NE cor. NE SE ..... Drlg. shale 2,100 ft.

S. B. Hickman's No. 1 Hogg, 330 ft. S, 150 ft. E, NW cor. SE SE, Sec. 35-16-17 ..... Dry and abd. 2,140 ft.

VAN BUREN COUNTY

Glenn Kohle et al's No. 1 Scalan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13 ..... T.A. 50 ft.

WASHINGTON COUNTY
(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... S.D. for funds 1,795 ft.

H. H. Taylor et al's No. 1 Runny, C NE SW, Sec. 1-12-29. S.D. 1,700 ft.

YELL COUNTY
(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21 ..... S.D. 5,710 ft.

EAST TEXAS

BOWIE COUNTY

Devore & Midfield's No. 1 Roy B. Cooper, 200 ft. S, 200 ft. W of NE cor. R. B. Cooper 115-ac. tr., Wm. Ward Sur. ..... S.D. 1,048 ft.

Hindeman & Ball's No. 1 Merritt (was Maud-Redwater Oil Co.'s), 175 ft. N, 175 ft. E, SE cor. G. W. Hardidge 100-ac. tr. on Floyd Merritt tr. in Y. S. McKinney Sur. ..... Drlg. hard chalk 2,180 ft.

Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W of SW cor. J. H. Dyer Sur. ..... Derrick.

Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. ..... Cored gray sandy shale 2,796 ft

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 127-ac. tr. in J. H. Murphy Sur. ..... S.D. 3,600 ft.

CASS COUNTY

E. K. Atkinson's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur. ..... Derrick.

R. G. Baker's No. 1 W. R. Caver, on W. R. Caver 75-ac. tr., John Lick Sur. ..... Rigging up.

Davis & Pigg's No. 1 Roy Brian, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur. ..... Drlg. 1,862 ft.

Sam B. Hunter's No. 1 Marshall Felker, 1,800 ft. E, 150 ft. N, SW cor. 66-ac. tr., L. Chambers Sur., landowner shows Jenkins on map ..... Dry and abd. 3,708 ft.

Geo. McKamie's No. 1 R. E. Hall, 150 ft. N, 150 ft. W, SE cor. Hall's 117-ac. tr., H. Buckler Sur. ..... Set 12½-in. 165 ft.

C. E. Murdock's No. 1 First National Bank, Evans Watson Sur. ..... Coring shale 3,500 ft.

Olds & Smith's No. 1 Athony, 3,056 ft. W-E line, 856 ft. S-N line, J. C. Byers Sur. ..... S.D. 1,534 ft. (correct depth).

John C. Rogers' No. 1 I. E. Lanier, 573 ft. N, 379 ft. W, SE cor. Lanier 36 ac. in K. E. Welborn Sur. ..... S.D. 2,275 ft.

John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur. ..... S.D. 955 ft.

HARRISON COUNTY

Wm. H. Atkinson's No. 1 O. D. Hays, 900 ft. E, 150 ft. S, NW cor. O. D. Hays' 46-ac. tr., J. H. Chaffin Sur. . Location.

Elmore & Bonner's No. 1 J. C. Lowery, in center of J. C. Lowery 81-ac. tr., W. W. O. Stanfield Sur. ..... Set 10-in. 200 ft; drlg. 2,598 ft.

Everett Prod. Co.'s No. 1 R. L. Gypert, 1,320 ft. W of NE cor., 150 ft. N at right angles from NE cor. of E. M. Wilder Sur. in Richard Hooper Sur. ..... Derrick.

Gholson et al's No. 1 Bivins Farm Co., on J. K. Bivins, Jr.'s 320-ac. tr., Thos. Toby Sur. ..... Derrick.

O. O. Olford et al's No. 1 R. W. Bolding, 330 ft. E of SE cor. J. B. Cullen's 161-ac. tr., 300 ft. N of N line of Mrs. C. L. Brown's 20-ac. tr., W. W. O. Stanfield Sur. ..... Location.

Geo. L. Pace et al's No. 1 T. G. and Eugene Barker, 710 ft. N of S line, 1,930 ft. W of E line, SE cor. 230-ac. tr., Victor Pedraso Sur. ..... Set 10-in. 75 ft; drlg. shale 2,-832 ft.

O. H. Parkening's No. 1 T. J. Taylor, C, Blk. 32, W. H. Payne Sur. ..... Rigging up.

O. H. Parkening's No. 2 T. J. Taylor, C, J. C. Hawley Sur. ..... Derrick.

W. G. Ray Drlg. Co.'s No. 1 F. C. Hall, D. Davis Sur. .. Dry and abd. 3,752 ft.

Rowe-Nichols' No. 1 Pitts, E. A. Merchant Sur. ..... Abd. location.

Ryan Consolidated Pet. Corp.'s No. 1 Dr. H. H. Key, 1,500 varas N of SE line, 500 varas E of SW line, of E. Carroll Sur. ..... Rigging up.

Seigel Bros. and Kelinson's No. 1 Taylor (no check), F. O'Neil Sur. ..... Derrick.

Thomas & Kinsey's No. 1 J. R. Watson, Thos. Iden Sur. . Location.

MARION COUNTY

Eden Oil Co.'s No. 1 J. M. DeWare est., 150 ft. S, 1,507 ft. E, NW cor., S. R., Hazelwood Sur. ..... Dry and abd. 3,304 ft.

Gist, Claunch & Dodson's No. 1 Miller, 1,470 ft. E line, 725 ft. N line, SW cor. H. Fulgran H.R. Sur. ..... Rigging up.

Geo. Hindman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 3,555 ft. E most easterly W line, Alexander Albright Sur. ..... Drlg. shale 1,260 ft.

Hindeman & Rhondo's No. 1 McGaughey, 1,547 ft. W, most northerly SW cor., 1,638 ft. N most northerly S line, W. J. Willis Sur. ..... Drlg. chalk 2,675 ft.

P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. ..... S.D. 1,884 ft.

Shelton et al's No. 1 J. M. McNeal, 800 ft. S, 400 ft. W, NE cor. McNeal's 721-ac. tr., R. Fowler Sur. .... Location.

PANOLA COUNTY

Everette Drlg. Co.'s No. 1 E. L. McDaniels, 200 ft. S, 200 ft. W, NE cor. McDaniels' 116 ac., Alanson Barr Sur. ..... S.D. 350 ft.

Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur. .. Location.

The Texas Co.'s No. 2 G. W. Brumble, 400 ft. S, 200 ft. E, NW cor., Jno. Womack Sur. ..... Drlg. anhydrite 4,429 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... S.D. 2,795 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... S.D. 2,280 ft.

SHELBY COUNTY

I. M. Bradley's No. 1 Ashberry (no check), G. W. Mitchell Sur. ..... Began Apr. 23; drlg. 500 ft.

E. L. Chapman's No. 1 Pickering Lbr. Co., C. E. Henry (headright) ..... Drlg. 3,000 ft.

Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. .. S.D. 3,111 ft.

H. H. Gracey's No. 1 J. A. Morrison, 1,500 ft. N, 200 ft. E, SW cor. J. A. Morris' 109-ac. tr., Wm. English Sur. ..... Rigging up.

T. A. Martin's No. 1 J. B. Bush, S 8° E, 2,000 ft. from NW cor. J. B. Bush's 77-ac. tr., thence E at right angles to said line 200 ft., Alfred Lindsey Sur. .... Moving in rig.

Henry Maulding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 80-ac. tr., A. D. Fountain Sur. ..... Drlg. 1,520 ft.

Sloan Prospecting Co.'s No. 1 Sanford, approximately 300 ft. N and 200 ft. E, SW cor. B. Sanford 49-ac. tr. in M. M. Vann Sur. ..... Began Apr. 23; drlg. 50 ft.

Sloan Prospecting Co.'s No. 1 Windham, H. English H.R.S. ..... Drlg. 2,800 ft.

Bradford Producers Increase Activities Of Their Association

BRADFORD, Pa., May 1.—Reorganization plans of the board of directors of the Bradford District Oil Producers' Association—to include enlarging the present board to 35 members, maintaining a full-time executive secretary and office, adopting a new set of by-laws, and a dinner meeting of producers at the Emery on April 29—have been completed. Letters announcing the plans were placed in the mails Saturday.

The directors, in annual meeting in February, changed the name of the organization from Northwestern Pennsylvania Oil Producers' Association to Bradford District Oil Producers' Association, feeling the closer tie-in the Bradford and Pennsylvania oil to be of more advantage to members.

Letters mailed Saturday from the office of President A. E. Booth state that the directors have been considering reorganization for some time, believing that "the present set-up of the association does not allow of a sufficiently broad representation on the board to keep contact with a large majority of the producers in this district."

The Association's Needs

"The conditions existing in our local producing industry for the past two years," Mr. Booth's letter declares, "have brought out very clearly the urgent need for a larger, better financed, and more active organization, with an established office and executive secretary in charge."

The object of the association, it was pointed out, is to promote the welfare of the producing industry in this district. Activities will include keeping producers informed on supply and demand for Pennsylvania oil, research work through Pennsylvania State College and other state and federal agencies on increasing recovery and decreasing costs, co-operation with the Pennsylvania Grade Crude Oil Association and local agencies on broadening the market, study and recommendations on conservation problems as applying to this district, contact with newspapers and furnishing items of news of the local oil industry, monthly bulletins to be sent members informing them of activities, and to study local taxation and, where justified, to secure reductions.

EASTERN FIELDS

(Continued from Page 74)

J. B. Montgomery heirs farm in East Finley Township came in dry.

In Beaver County the Hoffs Oil Co. has a very light gasser in their test on the M. L. Cooper farm in Independence Township. This well was completed at 1,450 feet and in the 100-foot sand. Well No. 3 of the Lorish Oil Co. on the C. Lorish farm in Kennedy Township, Allegheny County, was completed in the Gordon sand at 2,250 feet for a one-half barrel oil producer.

Greene County completions were all gassers. The Manufacturers Light & Heat Co.'s test on the John McGinnis farm in Richhill Township was brought in at 1,422 feet and in the Second Salt sand. It is a gasser in the 1,250,000-foot class. The J. P. Minor farm in Dunkard Township is the location of a fair gasser brought in by the Greensboro Gas Co. at 3,275 feet and in the Bayard gas sand. It is a test well. The second test of the Carnegie Natural Gas Co. on the George Bowers farm in Perry Township was completed at 3,052 feet as a gasser.

Drilling in Southwest Pennsylvania

D. L. Shaffer & Co. has its test on the William Jones farm in Wayne Township, Greene County, shut down at 850 feet. The Manufacturers Light & Heat Co. has a fishing job in its No. 3,443 well on the Felix Bell property in Wayne Township at 1,308 feet. J. B. Orndoff is rigged up for his test on the J. E. Scott farm in Center Township.

The Natural Gas Co. of West Virginia has put its No. 703 on the S. A. Post farm in South Franklin Township, Washington County down to the 2,740-foot level, and M. Green & Co. has drilled its test on the John Craig farm in Donegal Township down to a depth of 1,170 feet. Potts Brothers have a rig standing on the A. Woodruff farm in Chartiers Township. It is for a test well.

In the Brush Creek district of Jefferson Township, Butler County, Charles Behning & Co. has their test on the Charles Behning property shut down after drilling it down to a depth of 1,500 feet.

CANADIAN FIELDS

(Continued from Page 74)

13-20-3w5, is drilling 146 feet in the lime at 4,873 feet, with wet gas flow around 1,500,000 feet. The test is logging shallower than Spooner's No. 1, in the same section, which got production 290 feet in the lime and is reported making around 96 bbls.

Imperial Drilling

In South Turner Valley, Merland Oil Co.'s No. 1, Section 27-18-2w5, is drilling 166 feet in the lime at 5,155 feet, with indications reported promising. This test is in the extreme south end and will materially extend the proven area.

In Section 17-19-2w5, Lowery Petroleum's No. 2, NW, same section, is drilling in the lime at 6,228 feet, making hole slowly, and seems likely to establish a new depth record for the field. The only deeper hole in Turner Valley was British Dominion's No. 1 in the central field, abandoned at 6,600 feet without reaching the lime.

South Turner Valley

Among the independent tests in South Turner Valley, East Crest Oil Co.'s No. 3, LSD 4, Section 16-19-2w5, is making new hole at 4,531 feet after cementing in the lime at 4,496 feet. Pipe has been solidly set with concrete from top to bottom of the string to handle heavy gas pressure.

Further south, Miracle Oils' No. 2, LSD 16, Section 5-19-2w5, is drilling 13-inch hole in the McDougall-Segur sand at 2,660 feet. Mercury Oils' No. 6, LSD 12, Section 4-19-2w5, is at 1,380 feet and still running 16-inch pipe. Mercury's No. 1 is reported maintaining an average production around 531 bbls. a day.

North Turner Valley

In the North Turner Valley, United Oils' No. 4, LSD 2, Section 24-20-3w5, is drilling at 5,450 feet in the Dalhousie sand.

Spring Coulee Test

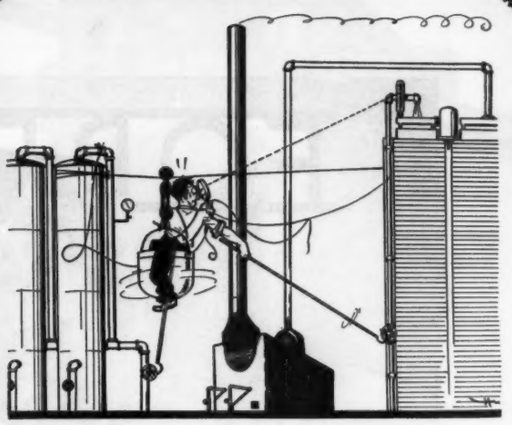
On the Spring Coulee structure, southern Alberta, Alberta Pacific Consolidated Oils' No. 1, recently finished bailing and testing production. Oil shows had been met at 5,935 feet and the hole was drilled a little deeper before testing. The cores indicated a very dense sand, and a careful production test at this depth failed to show anything approaching commercial production. Drilling was resumed, and the cores looked so good that at 5,994 feet a second production test was made. It is unofficially reported the second test failed to develop anything commercial. It will likely be drilled deeper into the lime. While there is some uncertainty as to the actual horizon in which the shows were met, it is generally thought to correspond to the Madison limestone of the Turner Valley Field. In the latter field, several small shows of wet gas are usually encountered in the upper lime and the commercial production at some depth in that formation.

Border Fields

East of Coutts, Mayland Southern's No. 1, LSD 13, Section 4-1-9w4, is reported drilling below 430 feet and checking about 300 feet structurally lower than Western Natural Gas-Mahoney's No. 1, south of the international boundary, which got a 10,000,000-foot flow in the Sunburst sand. Mayland Southern's No. 1 got a large gas flow, reported as high as 2,500,000 feet in the Eagle sand, which was topped at 150 feet.

On the Montana side, B. & H. Co.'s No. 1 Haynes, just south of Cardston, Alberta, and about 6 miles north of Cut Bank, Mont., has a rated production of 100 bbls. from a sand between 2,762 and 2,775 feet. The well filled up 1,800 feet and made one flow while swabbing. Production comes from a sand in the black Ellis lime 40 feet below the base of the Kootenay. The sand apparently cor-

Billions of Bubbles



The Last Word In Natural Gasoline Plants

YES, but that was thirteen years ago. Refinements not even dreamed of then, today are accepted as matters of course. With the artist's aid there is here presented a more or less faithful picture of an "efficient" absorption plant, as conceived in the year of grace 1918 . . . one of the first to be erected in California.

Note the still, a converted—if not perverted—boiler, fired by hand. The levels? Ah, the levels in both still and absorbers were hand controlled. The dephlegmator was hand controlled and, be it remembered, the thermometer was placed atop the cooling tower and the valve down on the ground. Even the pressure on the absorbers was hand controlled. Water from the dephlegmator reflux tank, as well as from the gasoline accumulator, had to be periodically drained.

In those days an operator *operated*, and how! All of which gives point to the fact that a young engineer, sent out to check operations on the plant here shown, swore a big swear that if it ever fell to his lot to design and build an absorption plant, he would certainly give the operator a break. Out of that vow has come the ultra-modern, highly efficient, automatic Campbell Plant.

Campbell plant operators are quiet-eyed, steady-nerved men; not forced to dash madly from one piece of equipment to another. They have time to give intelligent thought to their work, to acquaint themselves thoroughly with the last word in natural gasoline plants.

Bulletin No. 7 goes fully into Campbell plant design and technique. Ask for it.

J. A. CAMPBELL CO.
Natural Gas Engineers
CONSULTING DESIGNING CONSTRUCTING
PHONE-416-93
P.O. DRAWER 669
LONG BEACH, CAL.

STEARNS-ROGER MFG. CO., DENVER
MID-CONTINENT AGENCY

Originators of Oil-Froth Absorbers

FOREMOST

IN field after field of towering derricks, handling operations that reach deep into earth and all over the world wherever the "golden liquid" spouts —Parkersburg Steel Equipment stands Foremost for Economy.

Foremost in simplicity of design, in accuracy of fabrication, in speed of erection, in strength and security of construction—no wonder oil men the world over find economy in the enduring performance of Parkersburg Steel Derricks and complete Rigs.

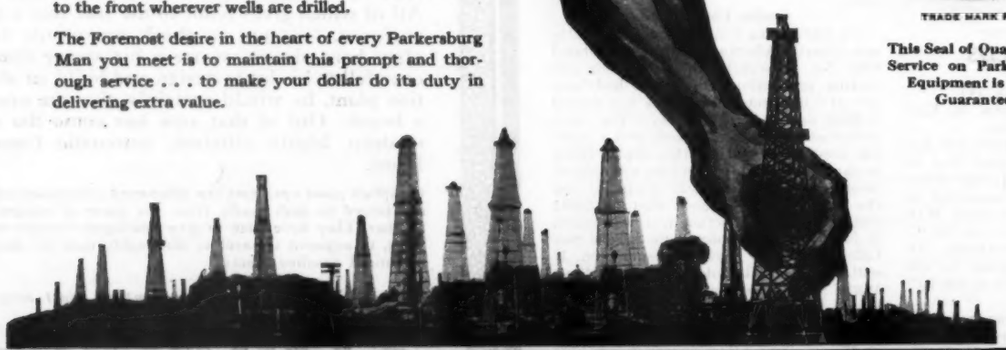
Confidence in the quality of Parkersburg Products has been faithfully earned through more than a third of a century of satisfactory and economical performance. In addition—a thorough, equally well-established and far-reaching service has brought Parkersburg Products to the front wherever wells are drilled.

The Foremost desire in the heart of every Parkersburg Man you meet is to maintain this prompt and thorough service . . . to make your dollar do its duty in delivering extra value.

THE PARKERSBURG RIG AND REEL CO.

TRADE MARK REG.

This Seal of Quality and Service on Parkersburg Equipment is Your Guarantee.



QUALITY AND SERVICE

From DERRICKS THE PARKERSBURG RIG AND REEL CO. To TANKS

PARKERSBURG, W. VA.

NEW YORK • TULSA • FT. WORTH • HOUSTON

BRANCHES IN ACTIVE FIELDS

CABLE ADDRESS "CARIGSEL"

responds to the Emrick sand in the Bannatyne Field and the Vanalta sand of the Red Coulee Field, and is generally absent from the Kevin-Sunburst area, though it occasionally appears there as a stray sand. B. & H. Co.'s No. 1 is located in C SW SE Section 2-34-6w, less than a mile southwest of the Drumheller discovery well now supplying gas to Cut Bank. The Drumheller gas came from the same horizon, that well being higher on structure. The Blackfeet Indian reserve is about a mile west of the B. & H. Oil Co.'s well. The latter company holds about 800 acres, and the company's backers include J. N. Thelen and F. J. Butcher of Great Falls, E. A. Atkins of Salt Lake City, H. M. Kluht of Shelby and R. H. Breckon of Calgary. The venture may possibly lead to drilling in the Cardston area north of the Alberta line.

Hudson's Bay Tests

In the Keho Lake district, southern Alberta, Hudson's Bay Oil & Gas Co.'s Keho No. 1, LSD 2, Section 17-11-22w4, is making new hole at 3,518 feet after cementing back several hundred feet to overcome caving.

In the Castor district, Hudson's Bay's Paintearth No. 1, LSD 5, Section 27-29-15w4, is drilling at 4,170 feet with about 3,000 feet of salt water standing in the hole.

In the province of Manitoba, Commonwealth Petroleum's No. 2, LSD 2, Section 26-2-9WPM, is moving in equipment. Location is a mile north of No. 1 in LSD 2, Section 23-2-4WPM, which got a fair flow of gas at 1,200-foot depth.

Wainwright Field

In the Wainwright Field, east central Alberta, Fabyan Petroleums, Ltd., Vancouver, B. C., is reported starting a new test near Fabyan. It is reported that Mr. Williamson, formerly associated with Wainwell Oils, Ltd., is arranging for some drilling on acreage in the Wainwright section.

British Columbia

In British Columbia, Okanagan Oil & Gas Co.'s No. 1, Section 2-26-Osoyoos, resumed drilling recently at 1,275 feet after a shutdown due to a broken drill stem. The drill is working in a limestone formation, with small shows of oil and gas reported.

Home Oil Meeting

Shareholders of Home Oil Co. held their annual meeting at Vancouver, B. C., on April 25. The following officers were elected: President, Col. Nelson Spencer; vice president, Gen. V. W. Odlum; secretary-treasurer, George S. Harrison; Gen. J. W. Stewart, chairman of directors; W. J. Blake Wilson, chairman of operating committee, and W. H. Malkin, chairman of finance committee. Colonel Spencer succeeds Hon. W. C. Shelly, who retired. Colonel Spencer, who presided, reported that the lower production of the Home wells in South Turner Valley was due not so much to freezing of the wells as to decrease in the naphtha content of the gas. Discussing the situation, he said:

"The gas flow is as great as ever, but there does not seem to be any way of getting the same content. Turner Valley is a comparatively new field, and geologists declare they never have had similar experienced in regard to the declining value of the naphtha content. It seems quite apparent there is a limited naphtha supply in Turner Valley, and Home Oil might have got just as much production from one or two wells as from the five it brought to completion and the two that were partly drilled."

HEATING BOILER FEED WATER LOWERS COST

(Continued from Page 80)

h = Temperature of feed water after leaving the heater.

Example: Let the gauge pressure of the boiler be 200 pounds: H = 1,194. Temperature = 388° F., and latent heat = 838. h' = 40° F., h = 140° F. Per cent saving of fuel:

$$\frac{100(140-40)}{[(388+838)-32]-40} = \frac{10{,}000}{1{,}154} = 8.66 \text{ per cent.}$$

This percentage should be easily obtained on drilling of wells.

Besides the saving in fuel effected by the use of feed water heaters, other advantages are derived. The time required for the conversion of water into steam is diminished and the capacity of a boiler is correspondingly increased. Furthermore the feeding of cold water into a boiler has a tendency of setting up strains and stresses due to temperature changes which are reduced as the temperature of the feed water approaches that due to the steam pressure.

The following table has been computed to show the approximate fuel saving in per cent resulting from the various increases in temperature, at a boiler pressure of 200 pounds gauge. The saving at other pressures will vary somewhat.

Temperature of water entering heater—	Temperature of water leaving heater in degrees Fahrenheit— 120	140	160	180	200	220	240	260	280	300
	(Percentage saved in fuel)									
32	7.33	8.98	10.66	12.33	14.06	15.67	17.36	19.06	20.76	22.48
35	7.08	8.74	10.41	12.16	13.75	15.43	17.11	18.81	20.51	22.22
40	6.74	8.38	10.06	11.73	13.42	15.11	16.76	18.51	20.22	21.95
45	6.30	7.99	9.67	11.36	13.04	14.74	16.45	18.08	19.90	21.61
50	5.81	7.60	9.29	10.98	12.74	14.39	16.10	17.82	19.55	21.29
55	5.50	7.20	8.90	10.61	12.46	14.03	15.74	17.47	19.20	20.96
60	5.10	6.81	8.52	10.23	11.90	13.64	15.48	17.13	18.87	20.55
65	4.70	6.41	8.12	9.93	11.56	13.21	15.02	16.76	18.51	20.28
70	4.29	6.01	7.73	9.45	11.35	12.92	14.66	16.40	18.16	19.94
75	3.88	5.60	7.33	9.06	10.80	12.54	14.20	16.04	17.81	19.59
80	3.45	5.19	6.93	8.67	10.40	12.16	13.92	15.68	17.37	19.24
85	3.04	4.78	6.53	8.27	10.02	11.78	13.54	15.31	17.09	18.89
90	2.62	4.36	6.12	7.87	9.63	11.40	13.17	14.94	16.74	18.54
95	2.19	3.94	5.70	7.47	9.23	11.01	12.74	14.57	16.37	18.13
100	1.76	3.52	5.29	7.06	8.83	10.62	12.40	14.20	16.00	17.82

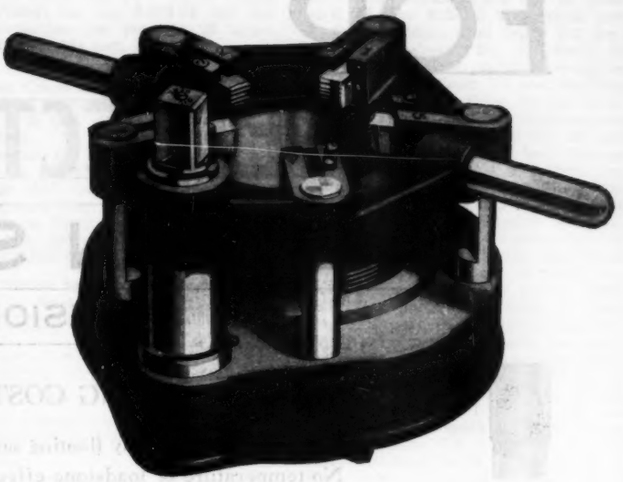
A boiler will use from 300,000 to 600,000 cubic feet of gas per day, depending on the capacity of the boiler.

The exhaust steam can be used for two purposes, first, for the condensing of water for the boiler and the heating of the feed water going into the boiler. The sketch attached to this report will show one arrangement of utilizing exhaust steam. The exhaust steam from the engine passes through the superheater "B," a joint of 15-inch casing with 2-inch coils, and then, after being joined by the steam from the slush pumps, as shown in the drawing, enters the separator "A." The water supply, regulated by a valve controlled by the water level in "A" which operates the kidney valve, enters the condenser at the top and falling on baffles, condenses most of the steam as it passes through it to the outlet. The warmed water is taken by the pump and forced through coils in the superheater, "B," where it is heated by exhaust steam from the engine. This supply of hot water then passes to the boilers. Exhaust steam goes from mud pumps to condensers.

There is a condenser being manufactured and used in the Oklahoma City Field, but an old accumulator or separator tank can be used. By using a condenser, a saving in water will amount to around 20 per cent and better. This is quite a saving where water is scarce.

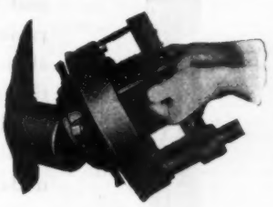
The Barnsdall Co. in writing its drilling contract is requiring its contractors to furnish gas and water. This makes the contractor much more careful in his use of fuel. One of the things that causes excessive uses of fuel is high pressure burners which allow the gas to blow through without proper combustion. Gas regulators should be installed on high pressure lines ahead of boilers. Other ways of wasting fuel is allowing boilers to pop off and by cleaning the drilling tools and derrick floors with steam. furnished with fuel and water.

Another loss in fuel that takes place is from radiation which amounts to from 25 to 30 per cent and can be greatly reduced by insulating boilers with asbestos. I have not been able to find any figures showing the exact percentages saved by insulation, but it must be about 10 per cent of the total fuel consumed.



A STYLIST—

—The Genuine "TOLEDO" No. 2—capacity 2½ to 4 inches—set the style by which RELIABLE geared threading devices are patterned. It is light, compact and a perfect threader. Built sturdy to withstand years of hard service. Let the Genuine "TOLEDO" No. 2 thread 2½ to 4 inch pipe for you and be sure of gratifying results.



THE "TOLEDO" NO. 2 WEIGHS BUT 57 LBS. READY TO BE PUT ON THE PIPE.

IT MAKES NO DIFFERENCE WHERE THE JOB IS TO BE DONE, THE GENUINE "TOLEDO" NO. 2 DOES THE WORK WELL AND WITH LITTLE EFFORT REQUIRED.

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, OHIO

"TOLEDO"

DEPENDABLE EQUIPMENT

FOR PERFECT PERFORMANCE

AMERICAN SHOT BARREL

PRECISION MACHINED

American Shot Pack Pump

LOWER LIFTING COST

No plunger freezing by floating sand.
No temperature or loadstone effects.
No cups to wear out or replace.
No loss of production in re-charging.

Pour the shot down the TUBING when production weakens and you have recupped the plunger. The lead will fill up any scored place in the gray iron barrel or plunger.

A trial will convince you that its operation and principle is right, and the secret of its success is the proper leading-up of the gray iron barrel and plunger, filling up with lead any inaccuracies in the barrel, making a smooth, close sliding fit for the plunger, adjusting its own tightness and insulating the loadstone away from the balls and seats. This insures pumping to maximum capacity and will pump sand even under unusual circumstances.

If it becomes necessary to pull plunger out of barrel after the shot has been poured in, the shot will pass the Standing Valve into the shot trap in the bottom of the barrel—NO HARM DONE. Run the plunger back in the barrel and pour in more shot.

HIGHER EFFICIENCY

This barrel is not an experiment, and there are several hundred in operation in the Mid-Continent field, pumping fluid of every gravity, in almost every well condition, from 900 feet to 6,130 feet.

Made for 2, 2½ and 3-inch tubing; upset or regular. The barrels are called and classified as 6, 8 and 10-foot barrels, although the barrel is considerably longer than classified. When ordering, specify the tubing as upset or regular, also the thread on same, likewise the rod on plunger, whether A.P.I. or old standard pin.

We recommend the 6-foot barrel for wells to the depth of 2,400 feet, 8-foot to 4,500 feet and the 10-foot to 6,000 or more feet.

WHY PULL RODS AND TUBING?
(Shoot it with Shot.)

Exclusive Distributors

CACTIZONA WATER TREATMENT

Mid-Continent Area

AMERICAN IRON & MACHINE WORKS CO.

OKLAHOMA CITY, U. S. A.

MANUFACTURERS OF OIL FIELD EQUIPMENT

American Releasing and Circulating Overshots
American Rock Bit Wrenches
American Milling Shoes
American Flexible Coupling for Rock Bit Lubricators
American Steel Tool Houses
American Steel Tool Boxes
American Forged Steel Wall Hooks
American Rock Bit Breakout Blocks
American Paraffin Bits
American Forged Steel Drill Collars
American Female Die Nipples
American Releasing and Circulating Spears
American Tapered Taps
American Forged Steel Subs
American Rotary Shoes
American Cone Fishing Baskets
American Steam Lubricators
American Side Tracking Mills
American Combination Reverse and Throttle Levers
American Steel Engine Foundations
American Automatic Cat Head
American Rock Bit Vises
American Rotary Milling Tools
American Myracle Sucker Rod Sockets
American Surface Bit Blades for Rock Bits
American Drill Pipe Float Joints
American Casing Suspender and Blowout Preventer
American Lead Plug
American Rock Bit Cone Fishing Sockets
American Steel Whipstocks
American Inside Pipe Cutter for Drill Pipe or Casing
American Adjustable Steel Rig Braces
American Fish Tail Bits
American Pipe Rackers
American Boltless Hose Clamp
American Shot Packed Barrel
American Cactizona Water Treatment

AMERICAN PRODUCTS SOLD THROUGH LEADING SUPPLY STORES

ROCKY MOUNTAIN AREA

(Continued from Page 51)

at 322 feet in gray shale. The 8¼-inch was cemented at 200 feet.

Fremont County

Producers & Refiners Corp.'s No. 10, SE NW SW, Section 14-32-95, Big Sand Draw, has cored to 5,136 feet in gypsum. It cut a sand at 5,119-27 feet. Ward Oil & Gas Co.'s No. 1, Section 28-34-90, Dutton Basin, is drilling at 2,100 feet, supposedly in the second Wall Creek. The first Wall Creek had a show of oil and gas and considerable water. The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, is shut down indefinitely at 4,485 feet.

Sweetwater County

Mountain Fuel Supply Co.'s No. 1 Cappers, SW cor. NE, Section 2-19-104, North Baxter Basin, had a considerable show of gas with water in the Dakota at a total depth of 3,660 feet and is testing. It may be continued on to the Sundance.

Lincoln County

Wyoming Producing Co.'s No. 1 Neil, NW SE NW, Section 14-24-113, Fontenelle structure, is drilling at 1,500 feet in very hard blue-gray lime.

Uinta County

E. L. Doheny's No. 1, C SE, Section 6-14-118, Aspen district, joint with the Trans-Western Petroleum Co., Ltd., is resuming at 3,216 feet after being shut down for the winter. It is being deepened with rotary.

Rocky Mountains Fields

Average daily production in week ending May 2:

WYOMING	
Salt Creek	26,450
Big Muddy	2,890
Byron	5
Dallas Derby	620
Dutton Creek	100
Elk Basin	770
Ferris	30
Frannie	890
Grass Creek	2,120
Hudson	460
LaBarge	1,090
Lance Creek	190
Lost Soldier	3,929
Lovell	....
Oregon Basin	1,380
Osage	1,130
Rock River	1,990
Poison Spider	229
Simpson Ridge	....
South Casper	380
Teapot	20
Warm Springs	....
Total	43,664
MONTANA	
Buckley-Border	760
Cat Creek	1,020
Dry Creek	620
Kevin-Sunburst	4,450
Lake Basin	50
Pondera	1,760
Total	8,660
COLORADO	
Florence	540
Fort Collins	970
Iles	1,010
Moffat	1,020
Orchard	350
Rangely	20
Tow Creek	360
Total	4,270
NEW MEXICO	
Rattlesnake	1,000
Hogback	460
Table Mesa	70
Artesia	695
Cap Rock	9
Getty	205
Hobbs	34,805
Jal	1,100
Lea City	2,450
Eunice	450
Texas-Pacific area	150
Total	41,403
Total Rocky Mountain fields	97,997
Total previous week	94,727
Difference	3,270

KANSAS FIELDS

(Continued from Page 44)

for No. 2 Elliston, C SE SE, Section 21-19-6.

Cowley County

Lehman and others' No. 1 Hill, SE cor. NE, Section 27-33-4, is a machine. G. M. Long and others' No. 1 Carlisle, SW cor. SE SE, Section 35-34-3, is dry and abandoned at 2,260 feet.

McPherson County

Gypsy Oil Co.'s No. 2 E. Stucky, NE cor. SW SE, Section 33-20-3w, is preparing to deepen from 3,290 feet. Lario and Shell Petroleum Corp. made location for No. 1-B Miller, NE cor. SE NW, Section 6-20-1w. Washoma Oil Co. and Shell Petroleum Corp.'s No. 1 Meek, NW cor. NE SW, Section 7-20-1w, is to be deepened from 2,796 feet. Mid-Kansas Oil & Gas Co. made location for No. 1 Unruh, SE cor. SW, Section 25-19-2w. Abilene Oil Co. and Shell Petroleum Corp. made location for No. 1 Hindmarsh, SW cor., Section 20-19-1w. Darby Petroleum Corp. staked location for No. 2 Kaegi, SE cor. SW NE, Section 20-19-1w. Darby Petroleum Corp. and Shell Petroleum Corp. made location for No. 3 Kaegi, SW cor. SE NE, Section 20-19-1w. Abilene Oil Co. and Shell Petroleum Corp. made location for No. 3 Anderson, SW cor. NW, Section 30-19-1w. Location has been made and the cellar being dug for No. 4 Anderson, NW cor. NE NW, Section 30-19-1w. No. 2 Garrett, NE cor., Section 30-19-1w, is also a location. Location has been staked for No. 1 Lewis, SE cor., Section 30-19-1w. Lario Oil Co. and Shell Petroleum Corp.'s No. 1 Locquement, NW cor. SW NE, Section 6-20-1w, has been completed for 778 bbls. in 12 hours from chat 2,923-3,160 feet, total depth 3,415 feet. Madison and Shell Petroleum Corp.'s No. 1 Russell, C SW SE, Section 1-19-2w, has been abandoned at 3,050 feet. Wakefield and Shell Petroleum Corp.'s No. 1 Kochn, NE cor. NW, Section 36-19-2w, has been completed for 861 bbls. in 12 hours from chat 2,920-65 feet. Madison and Shell Petroleum Corp.'s No. 1 Peterson, NE cor. SE SW, Section 1-19-2w, is dry and abandoned at 3,573 feet. Darby Petroleum Corp.'s No. 1 Fletcher, SW cor., Section 16-19-1w, has been completed for 29,000,000 feet of gas in chat 2,914-57 feet. United Petroleum Co. and Shell Petroleum Corp.'s No. 1 Smith, NW cor., Section 29-19-1w, has been completed in chat 2,942-3,173 feet, total depth 3,435 feet, with an estimated potential of 1,928 bbls.

Greenwood County

The Prairie Oil & Gas Co.'s No. 1 Davis, NW cor. NE SE, Section 32-22-13, has been completed as a dry hole at 1,833 feet.

Rush County

Deep Rock Oil Corp. and others' No. 1 Koril, C NW, Section 23-18-16w, is a rig.

Sedgwick County

Jones and Shell Petroleum Corp.'s No. 1 Lygrisse, NE cor. SW, Section 15-26-2, topped chat at 2,930 feet, drilled to total depth, 3,204 feet, and made 500 bbls. in 15 hours.

Stevens County

Texas Interstate Pipe Line Co. and others made location for No. 1 Spikes, C NE, Section 2-33-38w. No. 1 Gregory is a location, C NE, Section 13-34-38w. Kenny Coastal and others made location for No. 1 Baldridge, C NE, Section 10-35-39w. Texas Interstate Pipe Line Co. and others' No. 1 Greenwood, C SW, Section 12-34-38, has been completed for 4,000,000 feet of gas in sand 2,620-2,803 feet.

PANHANDLE FIELDS

(Continued from Page 66)

sired in this district now than oil due to the fact that several large gas lines are drawing a great supply of the commodity to supply cities in northern states.

COMPLETIONS IN PANHANDLE DISTRICT

Week ending May 2

Carson County

Plains Holding Co.'s No. 1 Magnolia fee, top pay 2,280 feet, initial production 31,000,000 feet of gas, total depth 2,593 feet.

Red River Gas Co.'s No. 5-A Bivins, top gas pay 2,525 feet, initial production 31,000,000 feet of gas, total depth 2,752 feet.

Texas Interstate Production Co.'s No. 1-108 Burnett, first gas 2,218-20 feet, initial production 8,000,000 feet of gas, total depth 2,514 feet.

Gray County

Gulf Production Co.'s No. 1-A Faulkner, initial production 1,150 bbls., total depth 2,942 feet.

Magnolia Petroleum Co.'s No. 1 Eddington, top pay 2,776 feet, initial production 60 bbls., total depth 2,898 feet.

Wilcox Oil & Gas Co.'s No. 20 Combs and Worley, top pay 3,076-84 feet, initial production 180 bbls. in 20 hours, total depth 3,084 feet.

Hutchinson County

Dixon Creek Oil Co.'s No. 1-F Johnson, initial production 40,000,000 feet of gas with 20 bbls. oil per day, total depth 3,125 feet.

Stanolind Oil & Gas Co.'s No. 3-B Ware, top pay 3,043 feet, initial production 288 bbls., total depth 3,100 feet.

Texelvania Oil Co.'s No. 1 Harvey, total depth 3,092 feet, plugged back to 3,045 feet, initial production 30 bbls., top pay 2,985 feet.

NORTH TEXAS PRODUCTION

Week Ending May 2

Panhandle district—	Bbls.
Carson County	4,548
Gray County	43,566
Hutchinson County	8,026
Moore County	221
Potter County	0
Wheeler County	250
Total production this week	56,611
Total production last week	57,260
Decrease	649
Wichita Falls district—	
Archer County	11,418
Baylor County	501
Clay County	602
Cooke County	1,800
Foard County	44
Jack County	1,201
Haskell County	23
Montague County	3,584
Throckmorton County	384
Wilbarger County	10,297
Wichita County	18,682
Young County	13,171
Total production this week	61,707
Total production last week	61,502
Increase	205
Ranger district—	
Brown County	3,549
Callahan County	2,413
Coleman County	1,679
Comanche County	691
Palo Pinto County	371
Eastland County	3,179
Shackelford County	3,807
Stephens County	4,531
Total production this week	20,211
Total production last week	21,280
Decrease	1,069

COMPLETIONS IN NORTH CENTRAL TEXAS

Archer County

Deep Oil Development Co.'s No. 1 Wilson, oil sand 2,216-24 feet, initial production 666 bbls. flowing through tubing, total depth 2,224 feet. W. C. Young's No. 1 Longford, dry and abandoned, total depth 2,300 feet. Frazier and King's No. 1 King, dry and abandoned, total depth 2,226 feet. Hunter Oil Corp.'s No. 1 Cooper, dry and abandoned, total depth 1,399 feet. Hunter Oil Corp.'s No. 1 Wagner estate, broken oil sand 1,391 feet, initial production 50 bbls., total depth 1,396 feet. F. P. Hynes' No. 3 Richardson, oil sand 1,167-73½ feet, initial production 35 bbls. on pump, total depth 1,173½ feet. W. C. Young's No. 1 Kover, temporarily abandoned location.

Cooke County

Benson and Benson's No. 1 Rohmer, dry and abandoned, total depth 1,924 feet. Ruwalt and other's No. 1 Fute, dry and abandoned, total depth 2,003 feet.

Denton County

Piolot Point Jacobs Syndicate's No. 1 Jacobs, dry and abandoned, total depth 1,560 feet.

Jack County

Brazos River Gas Co.'s No. 2 Keyser, gas sand 2,860-68 feet, initial production 2,500,000 feet of gas, total depth 3,025 feet.

Throckmorton County

Holder, Gordon's No. 1 Wilhelm, dry and abandoned, total depth 740 feet.

Young County

Ard Jr. and Gilliam's No. 1 Jeffery, dry and abandoned, total depth 900 feet. Bernhard's No. 2 Belknap Cattle Co., dry and abandoned, total depth 516 feet. Bolin and Lindsey's No. 9 Wolf, oil sand 870-86 feet, initial production 40 bbls., total depth 888 feet. Bernhard's No. 3 Belknap Cattle Co., dry and abandoned, total depth 527 feet. F. H. E. Oil Co.'s No. 9 Finch estate temporarily abandoned location. Junker and others' No. 1 Kemp, dry and abandoned, total depth 1,125 feet. King Royalty Co.'s No. 18 Larimore, oil sand 692-712 feet, initial production 106 bbls., total depth 712 feet. Lee and Brashear's No. 2 Jeffery, oil sand 712-731 feet, initial production 534½ bbls., total depth 731 feet. McClung and Dawson's No. 1 Price, dry and abandoned, total depth 712 feet. Peckham and Ard's No. 1 Belknap Cattle Co., dry and abandoned, total depth 773 feet. Putnam Oil Co. and others' No. 1 Jeffery, dry and abandoned, total depth 952 feet. The Texas Company's No. 2 Jeffery, oil sand 710-28 feet, initial production 304 bbls., total depth 728 feet. Continental Oil Co.'s No. 1 Baptist Church, total depth 4,833 feet, plugged back to 3,857 feet, shot 10 quarts and 200 quarts 3,800-3,850 feet, initial production 35 bbls. flowing through tubing. Hynds and Parker's No. 3 Criswell, dry and abandoned, total depth 3,036 feet. Long and others' No. 2 Williams, temporarily abandoned, total depth 2,503 feet. Roupe, Kessler and Monning's No. 1 Jordan, dry and abandoned, total depth 700 feet. Simpson and others' No. 1 Morris, dry and abandoned, total depth 1,008 feet. E. C. Stovall's No. 13 Stovall, oil sand 3,891-98 feet, initial production 120 bbls. oil and 1,500,000 feet of gas, total depth 3,898 feet.

COMPLETIONS IN RANGER DISTRICT

Brown County

Young Brothers and Alexander's No. 1 Armstrong, dry and abandoned, total depth 1,230 feet.

Callahan County

Guffey and others' No. 3 Finley, dry and abandoned, total depth 765 feet. Mid-Texas Oil & Gas Co.'s No. 1 Windham, total depth 4,438 feet, plugged back to 3,800 feet, shot 180 quarts 3,735-98 feet, initial production 8 bbls. oil and 1,500,000 feet of gas. John Victor's No. 1 Dyer, dry and abandoned, total depth 745 feet.

Coleman County

Arcadia Refining Co.'s No. 2 Burkett, broken oil sand 1,604-18 feet, initial production 125 bbls. oil and 8 bbls. of water, total depth 1,608 feet. Burkett Oil & Gas Co.'s No. 1 Webb, dry and abandoned, total depth 1,582 feet. Canyon Oil & Gas Co. and Lane's No. 1 Harris, oil sand 1,616-19 feet, initial production 125 bbls. oil and 5 bbls. of water, total depth 1,619 feet. Condor Petroleum Co.'s No. 1 Horn, gas sand 1,120-27 feet, initial production 1,891,000 feet of gas, total depth 1,127 feet. Jackson and others' No. 1 Wright, dry and abandoned, total depth 1,648 feet. Neversuch Oil Co.'s No. 3 Burkett, oil sand 1,601-10 feet, initial production 250 bbls., total depth 1,610 feet. Hampton and Carter's No. 1 Kingsberry, dry and abandoned, total depth 1,470 feet. Texas Petroleum Co.'s No. 1 Kinney, dry and abandoned, total depth 1,000 feet.

Eastland County

Prairie Oil & Gas Co.'s No. 1 Richardson, gas sand 1,193-96 feet, initial production 1,989,000 feet of gas, total depth 1,196 feet. Brown and others' No. 1 Heustis and Broyles, dry and abandoned, total depth 1,385 feet. Keough's No. 1 Owens, Lake sand 3,365-76-82-3,400 feet, initial production 20 bbls. flowing, total depth 3,478 feet. Lone Star Gas Co.'s No. 1 Cozart, sand 3,508-38 feet, initial production 600,000 feet of gas, total depth 3,857 feet. Nature's Treasure Oil Co.'s No. 1 McClelland, gas sand 3,580-95-3,659-63 feet, initial production 4,953,000 feet of gas, total depth 3,700 feet.

Palo Pinto County

Dalton and other's No. 1 Dalton, dry and abandoned, total depth 1,350 feet. McLester Oil Co.'s No. 4 Welbar, shot 30 quarts 1,755-67 feet, initial production 276,000 feet of gas, total depth 1,780 feet. Thomas and others' No. 1 Thomas, gas sand 2,985-96 feet, initial production 3,718,000 feet of gas, total depth 2,997 feet.

Stephens County

Hanolon Gasoline Co. and Lyman's, gas sand 1,845-52 feet, initial production 3,400,600 feet of gas, with 430 pounds rock pressure, total depth 1,852 feet.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 66)

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur. ... Spudded 20 ft. and shut down.

ECTOR COUNTY

Galt, Brown & Penn's No. 1 Cowden, C SE Sec. 12, Blk. 44, Twp. 2s, T.&P. Sur. ... Shut down 3,860 ft.

H. F. Wurts' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G. M. M. Br.&A. Sur. ... Shut down 3,275 ft.

EL PASO COUNTY

Lane-The Texas Company's No. 1 Malone, 3,110 ft. from SW and NW of Sec. 46, J. M. Day Sur. ... Shut down 3,089 ft.

Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. 254, S.F. No. 7,247 ... Fishing 615 ft.

FISHER COUNTY

Stanolind Oil & Gas Co.'s No. 2 Steele, 1,200 ft. E and 330 ft. N of SW cor. Sec. 210, B.B.B.&C. Sur. ... Top lime 1,600 ft.; drlg. 2,225 ft.

The Texas Company's No. 1 Jean, 330 ft. from E and 400 ft. S of Sec. 201, Blk. 1, B.B.B.&C. Sur. ... Drlg. 450 ft.

GAINES COUNTY

Landreth Prod. Co.'s No. 1 Alley, 660 ft. from N and W of Sec. 2, Blk. A-30, P.S.L. Sur. ... Rigging up.

Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE Sec. 4, Blk. A-8, P.S.L. Sur. ... Shut down 3,435 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 13, Blk. 4, H.&G.N. Sur. ... Spudded and shut down.

Perry & Posey's No. 1 Justice, 1,980 ft. from S and 1,650 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ... Drlg. 2,385 ft.

HOWARD COUNTY

Continental Oil Co.'s No. 1 Brindley, 660 ft. from S and E of Sec. 18, Blk. 33, Twp. 1s, T.&P. Sur. ... Drlg. 2,150 ft.

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 29, Twp. 1s, T.&P. Sur. ... Spudded and shut down.

HUDSPETH COUNTY

Patillo & Welch's No. 1 Briggs, 330 ft. from S and W Sec. 13, Blk. 73, Twp. 7, T.&P. Sur. ... Drlg. 525 ft.

Theison's No. 1 University, 3,050 ft. from S and 2,325 ft. from E of Sec. 17, Blk. E ... Spudded 35 ft. and shut down.

IRION COUNTY

Central Oil Co.'s No. 2 Horney, 150 ft. from N and 1,320 ft. from E Sec. 2, Blk. 3, H.&T.C. Sur. ... Shut down 1,360 ft.

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W, Sec. 3,081, Blk. 28, H.&T.C. Sur. ... Building rig.

Dixie Oil Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ... 300 ft. oil in hole from 4,155-63 ft.; top Pennsylvanian 4,875 ft.; drlg. 5,090 ft.

Fox's No. 1 Horney, 1,520 ft. from N and 1,525 ft. from W Sec. 2, Blk. 3, H.&T.C. Sur. ... Location.

Straughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land ... Plugging back to 1,220 ft. to shoot; total depth 1,506 ft.

JONES COUNTY

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 43.4-acre tract in G. Martinez Sur. ... Location.

Bond & Trout's No. 1 Williams, 330 ft. S and E of SW cor. of J. W. Martin Sur. A-1,308 in Sec. 12 ... Shut down 2,581 ft.; pumped 4 bbls. and exhausted.

Hardly Able Oil Co.'s No. 1 Butter, 5,790 ft. from S and 330 ft. from E of W. Littlefield Sur. No. 282, Abst. 251 ... Shut down 2,540 ft.; underreaming 6¾-in. casing.

Shaheen et al's No. 1 Chittim, 165 ft. from S and W of 139.8-acre farm in G. Martinez Sur. No. 195 ... Swabbed 20 bbls. in 24 hours; drlg. 2,057 ft.

Young & McNeil's No. 1 L. R. Cade, 150 ft. from N and 450 ft. E of NW cor. of J. A. Williams 200-acre tract in Sec. 17, but in Sec. 12, Blk. 19, T.&P. Sur. ... Fishing 1,060 ft.

LOVING COUNTY

Eppenauer et al's No. 2 Allen, 2,310 ft. from NE and 330 ft. from NW Sec. 90, Blk. 1, W.&N.W. Sur. ... Shut down 4,140 ft.

Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. ... Shut down 810 ft.

Ervin & Mahres' No. 1 Meyer, 990 ft. NE and 330 ft. SE of Sec. 3, Blk. 2, W.&N.W. Sur. ... Location.

Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. ... Total depth 1,365 ft.; fishing underreamer lugs.

Hoffman et al's No. 1 Ramsey et al, 330 ft. NE and SE Sec. 83, Blk. 1, W.&N.W. Sur. ... Total depth 4,059 ft.; running 6⅝-in. casing.

Hoffman et al's No. 2 Ramsey et al, 2,310 ft. from NE and 330 ft. from SE Sec. 83 ... Drlg. 1,500 ft.

Irwin et al's No. 1 Auld, 1,825 ft. from NE and 1,298 ft. from NW Sec. 67, Blk. 1, W.&N.W. Sur. ... Rig up.

Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ... Shut down 4,050 ft.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W Sec. 91, Blk. 1, W.&N.W. Sur. ... Rigged up and shut down.

Lockhart's No. 1 Bell, 1,721 ft. from NE and 410 ft. from SE Sec. 91, Blk. 1, W.&N.W. Sur. ... Drlg. 2,900 ft.

Lockhart & Co.'s No. 2 Hubbard, 1,650 ft. from NE line, 330 ft. NW line of Sec. 33, H.&T.C. Sur. ... Rigged up and shut down.

Martin et al's No. 1 Johnson, 1,320 ft. from NW and 330 ft. from SW Sec. 36, Blk. 1, W.&N.W. Sur. ... Location.

Richmond Drlg. Co.'s No. 1 Russell, 990 ft. from NE and 330 ft. from NW Sec. 80, Blk. 31, W.&N.W. Sur. ... Drlg. 2,640 ft.

Rush et al's No. 1 Wheat, 330 ft. from NW and SW Sec. 77, Blk. 1, W.&N.W. Sur. ... Cellar.

Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. ... Total depth 3,182 ft.; 300 ft. oil in hole; to shoot.

W. A. Suddreth et al's No. 1 Capitola Pool, 2,970 ft. from NE and 990 ft. from NW Sec. 73, Blk. 33, H.&T.C. Sur. ... Shut down 1,315 ft.

Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur. ... Rig.

California Co.'s No. 3 Allen, 2,191 ft. from NW and 2,182 ft. from SW Sec. 90, Blk. 1, W.&N.W. Sur. ... Drlg. by tools 2,858 ft.

California Co.'s No. 4 Allen, 3,121 ft. from NW and 3,113 ft. from SW Sec. 90, Blk. 1 ... Shut down 715 ft.

West Texas Pet. Corp.'s No. 1 Salsbury, 990 ft. from NW and SW Sec. 89, Blk. 1, W.&N.W. Sur. ... Testing; top pay 4,380 ft.; shut down 4,400 ft.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.R.R. Sur. ... Drlg. up underreamer lugs total depth 2,665 ft.

Voss & Bryan et al's No. 1 F. Bredenberger, 600 ft. from N and 1,000 ft. from W Sec. 455, E. Henkel Sur. ... Fishing 300 ft.

PECOS COUNTY

Hagen et al's No. 1 Shearer, 660 ft. from SE and 660 ft. from SW Sec. 45, Blk. 10, H.&G.N. Sur. ... Drlg. 860 ft.

McCurdy & Brown's No. 2 Tippett, 150 ft. from N and W of SE Sec. 40, Blk. 104, G.C.&S.F. Sur. ... Location.

J. R. Miller et al's No. 1 Bennett, 359 ft. W of CWL Sec. 1, Blk. 119, G.C.&S.F. Sur. ... Shut down 2,283 ft.

Penn Oil Co. et al's No. 1 Aiwin, 2,358 ft. from S and 1,327 ft. from W Sec. 155, Blk. 3, T.&P. Sur. ... Drlg. 3,325 ft.

Perren Oil Co.'s No. 2 Eaton, S of E Sec. 27, Blk. 3, H.&T.C. Sur. ... Fishing 1,765 ft.

Pure Oil Co.'s No. 1 Harrison, 2,310 ft. from N and 330 ft. from W of Sec. 203, Blk. 3, T.&P. Sur. ... Shut down 5,000 ft.

Riser & White's No. 1 Riser, 2,297 ft. from S and 997 ft. from E of Sec. 24, Blk. 12, H.&G.N. Sur. ... Drlg. 1,525 ft.

California Co. et al's No. 1 Thomas, 990 ft. from NW and SW Sec. 21, Blk. 34, H.&T.C. Sur. ... Location.

Whitaker et al's No. 1 Mary Devlin, 150 ft. from N and 150 ft. from E Sec. 69, F. Hernandez Sur. ... Shut down 430 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 6-C University, 1,120 ft. S and 1,100 ft. from W Sec. 25, Blk. 9 ... Location.

REEVES COUNTY

R. T. Hansford's No. 1 Williams, 150 ft. from S and W Sec. 17, Blk. 6, H.&G.N. Sur. ... Shut down 580 ft.

Humble Oil & Ref. Co.'s No. 1 Bolmorhea Livestock Co., 1,320 ft. from N and 1,320 ft. from W Sec. 33, Blk. 5, H.&G.N. Sur. ... Drlg. 330 ft.

Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ... Total depth 4,415 ft.; cleaning out.

California Co.'s No. 3 Kloh & Rumsey, 990 ft. from S and 1,320 ft. from E Sec. 11, Blk. 74, Twp. 4, T.&P. Sur. ... Drlg. 3,225 ft.; top salt 2,675 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 419 ... Shut down 2,385 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. ... Drlg. 2,225 ft.

Teas & Gant's No. 1 Allison, 1,320 ft. N and E of SW cor. Sec. 37, Blk. K, G.H.&S.A. Sur. ... Shut down 5,006 ft.; contract depth.

Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur. ... Drlg. 3,615 ft.

George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur. ... Shut down 5,053 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ... Drlg. 5,105 ft.

Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur. ... Spudded and shut down.

Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. ... Drlg. 3,170 ft.

Simon & Brock et al's No. 1 Cruse, 2,310 ft. from S and E Sec. 119, Blk. 97, H.&T.C. Sur. ... Location.

STERLING COUNTY

Beesley et al's No. 1 Foster, 2,940 ft. N and 300 ft. W of SW cor. Sec. 7, Blk. 22, H.&T.C. Sur., but in Sec. 16, Blk. 34, Twp. 4s, T.&P. Sur. ... Drlg. 1,610 ft.

TAYLOR COUNTY

John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor. Sec. 46, Lunatic Asylum Land ... Drlg. 6,385 ft.

Sanger et al's No. 1 City of Abilene, 330 ft. from S and 1,400 ft. from E of Sec. 66, Blind Asylum Land ... Shut down 2,785 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. ... Shut down 2,669 ft.

Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ... Shut down 3,150 ft.

Miller Bros.' No. 1 Allison & Burke, C NW cor. Sec. 10, Blk. 176, T.&P. Sur. ... Shut down 120 ft.

Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur. ... Shut down 6,120 ft.

Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. ... Shut down 912 ft.; cleaning out.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. ... Shut down 760 ft.; show oil and gas 725 ft.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW Sec. 1,628, E. H. Dinger Sur. ... Plugged back to 2,405 ft. to straighten hole; shut down 2,447 ft.

Mintex Oil Co.'s No. 1 Camp oil Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. ... Shut down 1,994 ft.

Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 ... Shut down 300 ft.

UPTON COUNTY

Mintex Oil Co.'s No. 1 Lane, 2,310 ft. from N and 1,650 ft. from W Sec. 36, Blk. 1, M.-K.-T. Sur. ... Top salt 738 ft.; drlg. 1,210 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ... Shut down 5,420 ft.; to run 5 3/16-in. casing.

O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ... Shut down 6,780 ft.

WARD COUNTY

Bradford et al's No. 1 Carson, 990 ft. from NE and SE Sec. 26, Blk. 5, H.&T.C. Sur. ... Shut down 1,280 ft.

Bradford & Abell's No. 2 Boogher, 1,160 ft. from NW and 800 ft. from SW. Sec. 11, Blk. 5, H.&T.C. Sur. ... Rigging up.

Beckley et al's No. 1 Johnson, 4,140 ft. from NE and 990 ft. from SE Sec. 8, Blk. 32, H.&T.C. Sur. ... Shut down 837 ft.

Buster Black's No. 1 Hall & Roberts, 990 ft. from NE and 1,650 ft. from NW Sec. 17, Blk. 34, H.&T.C. Sur. ... Shut down 745 ft.

Clyde Bradford's No. 1 Hardinage and Welsor, 330 ft. from SE and 330 ft. from SW, H.&T.C. Sur. ... Drlg. 2,325 ft.; 1,300 ft. fluid in hole, 75 per cent oil.

Central Oil & Gas Co.'s No. 1 Barrow, 330 ft. from NW and 1,263 ft. from SW Sec. 55, J. W. Jackson Sur. ... Spudded and shut down.

Gibson & Johnson's No. 1 Johnson, 4,140 ft. from SE and 990 ft. from NE Sec. 10, Blk. 32, H.&T.C. Sur. ... Underreaming 12¼-in. casing 807 ft.

Hankinson et al's No. 1 Emery, 3,090 ft. from SE and 510 ft. from SW Sec. 26, Blk. 5, H.&T.C. Sur. ... Drlg. 775 ft.

Magnolia Pet. Co.'s No.1 Sealy (Atlantic), 2,130 ft. from S and 1,650 ft. from E Sec. 45, Blk. F, G.M.M.B.&A. Sur. ... Drlg. 2,735 ft.; top salt 2,345 ft.

R. F. Owens' No. 1 Johnson, 100 ft. from NE and 1,100 ft. from SE of Sec. 8, Blk. 33, H.&T.C. Sur. ... Drlg. 4,355 ft.

Peck et al's No. 1 Merrett, 3,166 ft. from NE and 2,648 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur. ... Shut down 845 ft.

Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E Sec. 23, Blk. A, G.M.M.B.&A. Sur. ... Location.

Shipley et al's No. 5 Hayslett, 2,490 ft. from SE and 1,980 ft. from SW Sec. 17, Blk. 5, H.&T.C. Sur. ... Shut down 2,520 ft.; 1,500 ft. oil in hole; waiting on tubing.

Simms Oil Co.'s No. 1 Himmel, 330 ft. from NE and 2,310 ft. from SE Sec. 30, Blk. B-29, P.S.L. Sur. ... Drlg. 800 ft.

Sturm's No. 1 Jones, 330 ft. from SW and SE of Sec. 25, Blk. B-29, P.S.L. Sur. ... Spudded.

California Co. et al's No. 1 Lanham, 990 ft. from NE and SE Sec. 35, Blk. 34, H.&T.C. Sur. ... Building rig.

California Co.'s No. 1 Gordon, 330 ft. from NE and SE Sec. 6, Blk. 34, H.&T.C. Sur. ... Top pay 2,352 ft.; total depth 2,537 ft.; flowed 96 bbls. in 6 hours.

Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1 ... Drlg. 3,850 ft.

WINKLER COUNTY

White et al's No. 1 Owenby, 305 ft. from NE and 1,185 ft. from SE Sec. 7, Blk. 32, H.&T.C. Sur. ... Shut down 200 ft.

Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor. Sec. 2, Blk. B-5 ... Shut down 4,640 ft.

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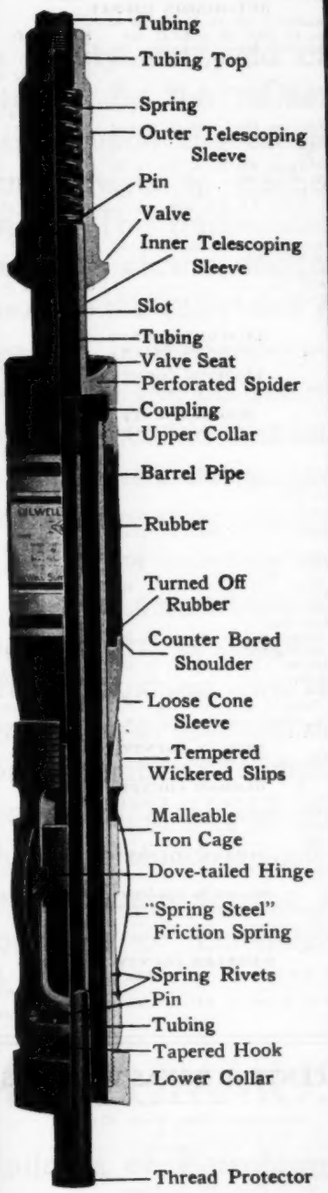


"OILWELL"

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 66)

Operators Royalty & Prod. Co.'s No. 2 Vanniman, 330 ft. S and W, E½ NE, Sec. 175, Blk. 3, L&G.N. Sur. . Fishing; T.D. 2,915 ft.
Sanders et al's No. 1 Wright, 330 ft. S, 114 ft. E, Sec. 12, Blk. 3, L&G.N. Sur. ..... S.D. 2,649 ft.
Skelly O. & G. Co.'s No. 1 Henston, 330 ft. N, 330 ft. E. Sec. 164, Blk. 3, L&G.N. Sur. ..... Drlg. 3,000 ft.
Stanolind O. & G. Co.'s No. 2 Cobb, 330 ft. S and E, Sec. 165, Blk. 3, L&G.N. Sur. ..... Drlg. 3,155 ft.
Steckoil & Reigers' No. 1 Davidson, 660 ft. N and W, Sec. 64, Blk. B-2, H.&G.N. Sur. ..... Rig.
Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. ..... S.D. 2,636 ft.
Warner Oil Co.'s No. 1 Morse, 330 ft. S and W, N½ NW, Sec. 68, Blk. 25, H.&G.N. Sur. ..... Cellar.

HUTCHINSON COUNTY

Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. .. S.D. 450 ft.
Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. ..... Drlg. 2,330 ft; big gas 2,330 ft.
Huber Pet. Co.'s No. 1 McIlroy, 330 ft. S, 330 ft. W, Sec. 28, Blk. Y, A.&B. Sur. ..... S.G. 2,280 ft; 3,000,000 ft. gas 2,-345 ft; drlg. 2,590 ft.
Liner Drlg. Co.'s No. 1-D Johnson Bros., 330 ft. N and E, W½ SW, Sec. 6, Blk. 1, B.&B. Sur. ..... T.D. 2,916 ft; to U.R. 6-in. csg; 2,000,000 ft. gas 2,915 ft.
Liner et al's No. 1 Johnson Bros., 990 ft. S, 330 ft. E, W½ SE, Sec. 39, Blk. Y, A.&B. Sur. ..... Spudded and S.D.
Stanolind O. & G. Co.'s No. 2-A Pitcher, 990 ft. S, 330 ft. W, SE, Sec. 19, Blk. M-21, T.C.R.R. Sur. ..... T.D. 3,150 ft; P.B. 3,135 ft; side-tracked 8-in. csg; drlg. new hole 2,252 ft.
Harry Steckel's No. 4 Whittenburg, 990 ft. N, 330 ft. E, NE, Sec. 89, Blk. Z, L.C.&S.F. Sur. ..... Drlg. 1,600 ft.
Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE, Sec. 39, Blk. Y, A.&B. Sur. ..... S.D. 3,115 ft.
The Texas Co.'s No. 1 Moore, 990 ft. N, 330 ft. W, SE, Sec. 21, Blk. M-21, T.-C. Ry. Sur. ..... T.D. 3,000 ft; preparing to run 6-in. csg.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW. Sec. 100, H.&T.C. Sur. ..... T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ..... Small S.O. 1,133-40 ft; S.D. 4,-167 ft.

MOORE COUNTY

Cloud & Dana's No. 1 Jones, 330 ft. N and E, SW, Sec. 169, Blk. 3-T, T.&N.O. Sur. ..... Trying to straighten hole; T.D. 3,220 ft; estimated 74,000,000 ft. gas.
Dana O. & G. Co.'s No. 1 R. Utey, 330 ft. S and W, NE, Sec. 135, Blk. 3, T.&N.O. Sur. ..... T.D. 3,526 ft; swbng. 12 bbls. per day with little gas; P.B. 3,-362 ft.
Gulf Prod. Co.'s No. 2 Kilgore, C SE, Sec. 29, Blk. P.Mc., E.L.R.R. Sur. ..... Drlg. 2,970 ft.
Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. ..... Location.
Magnolia Pet. Co.'s No. 1 Jones, 330 ft. N, 330 ft. E, Sec. 170, Blk. 3-T, T.&N.O. Sur. ..... Rig.
Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E, NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. ..... Cellar.
Plains Holding Co.'s No. 1 Bivins, 776 ft. S, 370 ft. E, S½ N½, Sec. 95, Blk. 46, H.&T.C.R.R. Sur. ..... S.G. 1,575 ft; drlg. 2,090 ft.
Plains Holding Co.'s No. 2 Bivins, 1,115 ft. S, 627 ft. E, Sec. 93, Blk. 46, H.&T.C. Sur. ..... Drlg. 1,550 ft.
Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.
The Texas Co.'s No. 1 Jester, C SW, Sec. 14, Blk. 6-T, T.&N.O. Sur. ..... Drlg. 2,075 ft.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. ..... S.D. 400 ft.
Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. S, G.C.S.F. Sur. ..... S.D. 800 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-B Crawford ..... Drlg. 2,275 ft; 3,000,000 ft. gas 1,-900-10 ft.

ROBERTS COUNTY

Ledrick-Clark et al's No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. ..... Rig.
Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. ..... S.D. 580 ft.

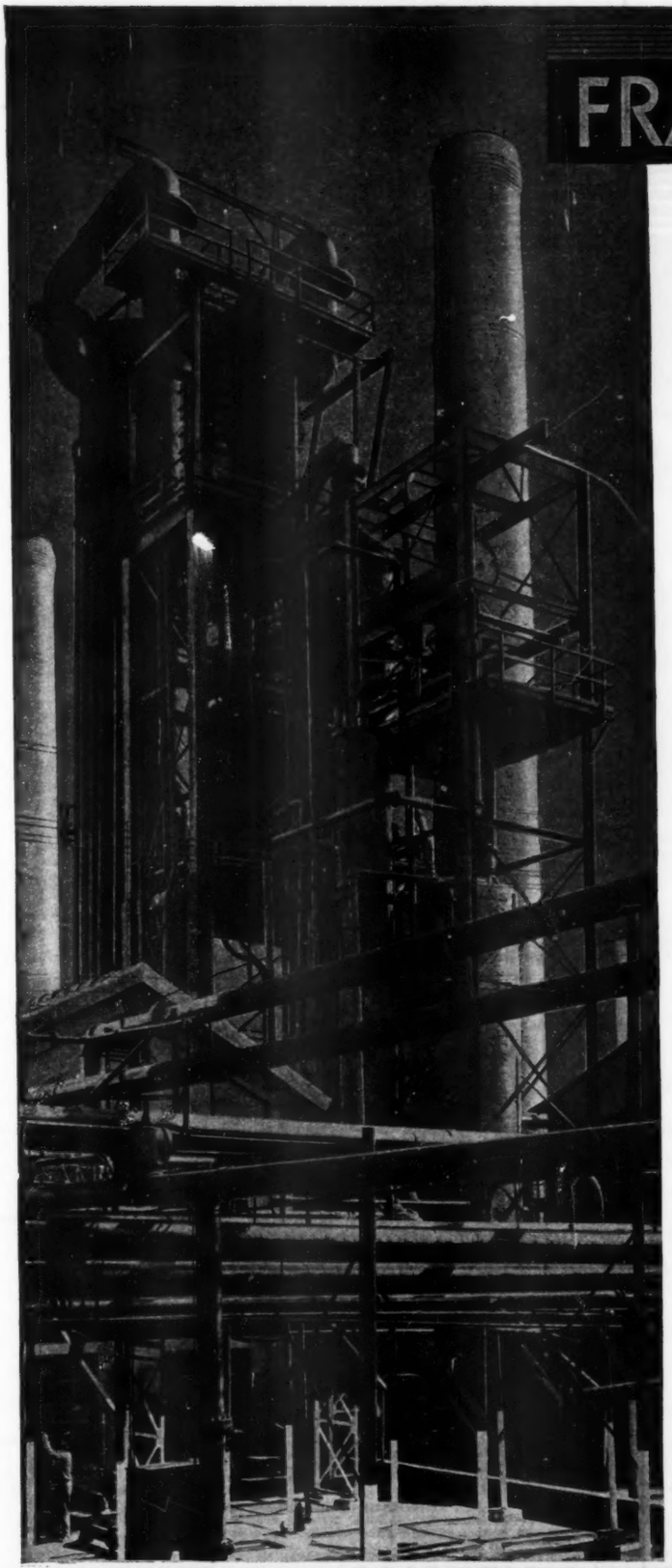
WHEELER COUNTY

Clarity et al's No. 1 Porter, NW cor. SE, Sec. 2, Blk. A-9, H.&G.N. Sur. ..... Rig.
Vollmert's No. 1 Porter, 330 ft. S and E, NE, Sec. 15, Blk. 27, H.&G.N. Sur. ..... Rigged up and S.D.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 65)

D. H. Byrd and Gulf Prod. Co.'s No. 1 Canimaras Bros., 5,505 ft. from NW, 1,528 ft. from NE of 817.6-ac. tract, 1,820 ft. from N, 2,505 ft. from W of survey, Harden Edwards A-64 Sur. ..... Rig up and shut down.
Callahan, Thompson et al's No. 1 Fenn, 463 ft. from N and 150 ft. from E, 778 ft. from S of 44.5 ac. tract, David Ferguson Sur. ..... Derrick.
Corley and Blair's No. 1 W. E. Bumpers, 150 ft. from E and 150 ft. from S of 10-ac. lease and 20-ac. tract, William H. Castleberry Sur. ..... Drlg. 1,700 ft.
Capital Prod. Co.'s No. 1 Osborne, 750 ft. from S line and 1,800 ft. from W line of survey, R. R. Bobbitt Sur. ..... Top sand 3,730 ft.; T. D. 3,785 ft.
Cranfill & Reynolds' No. 1 G. P. McGrede, 328 ft. from S and 250 ft. from W of 16-ac. lease, Dolores Sanches Sur. ..... Set 6⅝-in. csg.; T. D. 3,606 ft.
Cranfill & Reynolds' No. 2 Blackman, 1,040 ft. E of S line of Blackman 40-ac. from SW cor. of same and thence 240 ft. N at right angles, W. P. Chisum Sur. ..... Drlg. plug; T. D. 3,605 ft.
Tom David et al's No. 1 W. S. Pryor, 200 ft. from S and 200 ft. from W of 152-ac. tract, 2,600 ft. from E and 2,350 ft. from N of survey, Hamilton McNutt Sur. ..... Derrick.
Davis and Russell's No. 1 M. E. Anderson, 150 ft. from E and 75 ft. from S of 3-ac. lease in Kilgore Townsite, Mary Van Winkle Sur. ..... Drlg. 2,974 ft.
Daisy Oil Co.'s No. 1 Mrs. H. B. Ware, 1,000 varas from N and 350 ft. from W of survey, Avery B. Johnson Sur. ..... Drlg. 2,975 ft.
Delaney et al's No. 1 Homer Clemens, 396 ft. from N and 356 ft. from W of 22½-ac. tract, Dolores Sanches Sur. ..... Drlg. 2,484 ft.
Harry Elliott et al's No. 1 Woolley Jones, 2,125 ft. from N line and 3,720 ft. from E line of William H. Castleberry Sur. ..... Rig up.
Eslick and Little's No. 1 W. R. Nicholson, 1,205 ft. from E and 150 ft. from S of 1,094-ac. tract, Marsh Mann Sur. ..... Drlg. plug.
E. A. Eslick et al's No. 2 Springhill Church, 150 ft. from E and 150 ft. from S of 15-ac. lease, W offset to Mid-Kansas, Dolores Sanches Sur. ..... Drlg. 3,587 ft.
Flannagan Prod. Co.'s No. 1 A. J. Green, 200 ft. from E and 150 ft. from S of 35-ac. tract, G. W. Hooper Sur. ..... Drlg. 2,854 ft.; top Pecan Gap 2,-831 ft.
F. H. E. Oil Co.'s No. 1 Julia Flemister et al, 150 ft. from E and 150 ft. from S of 27.3-ac. tract, G. W. Hooper Sur. ..... Drlg. 2,950 ft.
Flannery & Bradley's No. 1 W. H. York, 150 ft. from S and center E and W of 18½-ac. tract, William Carlton Sur. ..... Set 176 ft. 10-in. csg.
Merren & Hays' No. 1 Hawkins, 160 ft. W of S line of Hawkins 325-ac. from SE cor. of same, thence 150 ft. at right angles, W. P. Chisum Sur. ..... Drlg. 1,305 ft.
Gibson and Adams' No. 1 Bill Collier, 150 ft. from S and 248 ft. from W of lease, Mary Van Winkle Sur. ..... Coring sand 3,551 ft.
Gulf Production Co.'s No. 1 Mary Chavles, 4,150 ft. from E line of survey and 2,100 ft. from N of county line, W. P. Chisum Sur. ..... Derrick.
Gulf Production Co.'s No. 1 L. S. Fishburn, 330 ft. N and 330 ft. W of NE cor., W. C. Alvice Sur., Francis W. Johnson Sur. ..... Derrick and rig up.
Gulf Production Co.'s No. 1 Muckelroy, 330 ft. from W line and 4,700 ft. from S line of survey, J. S. Carrithers Sur. ..... Set 174 ft. 10-in. csg.
Gulf Production Co.'s No. 1 Della Crim, 1,150 ft. from E of survey and 5,350 ft. N of county line ..... Set 204 ft. 10-in. csg.
Gulf Production Co.'s No. 1 Spear, 150 ft. out of NE cor. of survey, W. P. Chisum Sur. ..... Drlg. 1,825 ft.
Gulf Production Co.'s No. 2 A. Spear, 330 ft. from W and 2,900 ft. from N of survey, Mary Van Winkle Sur. ..... Drlg. rathole.
Harper Petroleum Corp.'s No. 1 Woodley Jones, 2,900 ft. from N line and 3,900 ft. from E line of William H. Castleberry Sur. ..... Derrick.
Hawkeye Pet. Co.'s No. 1 R. S. and J. C. McKinley, 250 ft. from S and 150 ft. from W of survey, Dolores Sanches Sur. ..... Rigging up.
Heydrick et al's No. 1 Lynie McGrede, 1,000 ft. from N and 330 ft. from E of McGrede 187 acres, Dolores Sanches Sur. ..... Set 112 ft. 10-in. csg.
Heep Oil Co.'s No. 1 S. B. Hall, 150 ft. from E and 150 ft. from S of lease and survey, David Dalnwood Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 1 J. A. Knowles, 4,150 ft. from W line and 4,150 ft. from S line of survey, Mary Van Winkle Sur. ..... Rig up.
Humble Oil & Ref. Co.'s No. 1 T. M. Armstrong, 1,353 ft. from N and 150 ft. from E of 603-ac. tract, Lewis J. Rigsby Sur. ..... Derrick and rig up.
Humble Oil & Ref. Co.'s No. 1 A. Carter, 780 ft. from S and 150 ft. from W of 92-ac. tract, David Ferguson Sur. ..... Derrick material.
Humble Oil & Ref. Co.'s No. 1 D. C. Johnson, 2,165 ft. from S and 150 ft. from W of 62.5-ac. tract and survey, John R. Crosby Sur. ..... Rig up.
Humble Oil & Ref. Co.'s No. 1 H. M. Lawrence, 540 ft. from N and 219 ft. from W of 100-ac. tract, David Ferguson Sur. ..... Moving in.
Hudson and McCamey's No. 1 Smith, 150 ft. S and 150 ft. W of W. Smith 43-ac. tract, J. S. Carrithers Sur. ..... Coring 3,558 ft.
Hurburt and Brown's No. 1 L. L. Mackey, 990 ft. from E and 990 ft. from S of 269-ac. tract, 1,000 ft. from W and 990 ft. from S of survey, G. Y. Chambers Sur. ..... Drlg. 1,790 ft.
H. P. Key's No. 1 King, 150 ft. out of SE cor. of 48-ac. tract, W. P. Chisum Sur. ..... Shut down 2,110 ft.
Kinsey-Trimble's No. 1 Griffith Davis, 922 ft. E of N line of Griffith Davis 119.5-ac. tract from NW cor. of same and 145 ft. S at right angles, W. P. Chisum Sur. ..... Drlg. 212 ft.
Lacey et al's No. 1 T. D. Anderson et al, 150 ft. from S and 150 ft. from W of 13-ac. tract, G. W. Hooper Sur. ..... Derrick.
J. K. Livingston Oil Co.'s No. 1 D. C. Johnson, 200 ft. from N and 150 ft. from E of survey, Martha Dillard Sur. ..... Derrick.
Lloyd Oil Corp.'s No. 2 Andrews, 952 ft. from S line and 339 ft. from W line of S. G. Andrews tract, William Hyde Sur. ..... Drlg. 2,950 ft.
Lucey Petroleum Corp.'s No. 1 Ranfle Christian, 165 ft. from E line and 160 ft. from S line of 37-ac. lease, G. W. Hooper Sur. ..... Drlg. 2,908 ft.
Masda Oil Co.'s No. 1 W. W. Cotton, 150 ft. out of SE cor. of 33-ac. tract, W. P. Chisum Sur. ..... Top sand 3,651 ft.; T. D. 3,659 ft.
Meck and King's No. 1 Harmony Grove School, 270 ft. from S and 150 ft. from W of 3.7-ac. tract, Mowry Irwin Sur. ..... Set 160 ft. 10-in. csg.
Mid-Kansas Oil & Gas Co.'s No. 2 Barton, 685 ft. S along W line and Hollingsworth survey, from NE cor. W. P. Chisum Sur., thence 150 ft. E at right angles, S. P. Hollingsworth Sur. ..... Moving in.
Mid-Kansas Oil & Gas Co.'s No. 1 Durham, 150 ft. from N and 150 ft. from E, W. P. Chisum Sur. ... Derrick.
Mid-Kansas Oil & Gas Co.'s No. 1 Hughey, 150 ft. from N and 150 ft. from W of tract and survey, James Hillard Sur. ..... Building derrick.
Mid-Kansas Oil & Gas Co.'s No. 1 Jack Castleberry, 730 ft. from S and 110 ft. from W of tract, Dolores Sanches Sur. ..... Rig up.
Mid-Kansas Oil & Gas Co.'s No. 1 E. M. Nettleton, 150 ft. from S and N offset to Republic's No. 1 Fisher, John Ruddle Sur. ..... Drlg. 2,783 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 J. J. Castleberry, 150 ft. from S and 150 ft. from W of most southerly SW cor. tract, Dolores Sanches Sur. ..... Drlg. 3,591 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Burton, 150 ft. from N and 150 ft. from W of 193.9-ac. tract and survey, Hollingsworth Sur. ..... Drlg. 3,381 ft.
John W. Olvey et al's No. 1 Ben Rodden, 187 ft. from N and 187 ft. from E of 10-ac. lease, William Robinson Sur. ..... T. D. 3,590 ft.; initial prod. 2,700 bbls. 12 hrs.
H. G. Oliphant's No. 1 Willis Smith, 1,569 ft. N and 359 ft. W of SE cor. of Smith 43-ac. tract, J. S. Carrithers Sur. ..... Top sand 3,569 ft.; T. D. 3,593 ft.
Owens et al's No. 1 C. E. Davis, 200 ft. from N and 340 ft. from E of 37-ac. tract and 18.3-ac. lease, William H. Castleberry Sur. ..... Derrick and material.
Pilot Oil Co.'s No. 1 Maggie Magrill, 125 ft. N and 230 ft. W of most southern SW cor. of Ike Denson tract, Dolores Sanches Sur. ..... Drlg. 1,700 ft.
Pace et al's No. 1 C. Harrell estate, 300 ft. from E line and 150 ft. from N line of 150-ac. tract, A. M. Coleman Sur. ..... Rig up.
Phillips et al's No. 1 M. T. Cole, 200 ft. out of SW cor. of M. T. Cole 320-ac. tract, Judson Meador Sur. ..... Drlg. 1,697 ft.
Prairie Oil & Gas Co.'s No. 1 Elder, 800 ft. from N and 800 ft. from E lines of survey, William McCurry Sur. ..... Location.



FRACTIONATION

The quality and yield of products obtained by the refiner depends essentially upon the capacity of the distilling towers to fractionate with precision. This fractionating capacity is a function of the design and construction of the tower and reflects the degree of understanding, skill and experience of the builder.

The Lummus Co. has had 30 years experience in the design and construction of fractionating equipment for a wide variety of exacting requirements such as the separation of acetone-methanol mixtures, oxygen and nitrogen from liquid air, the fractionation under vacuum of essential oils, the continuous separation of complex mixtures of acetic acid, aldehydes and tars, etc.

This understanding, skill and experience contribute to the outstanding performance of Lummus Petroleum plant.

THE LUMMUS CO.

Builders of Petroleum Plants

• • •

148 STATE STREET, BOSTON
30 CHURCH STREET, N. Y.

LUMMUS PETROLEUM REFINING PLANTS

Refugio Oil Corp.'s No. 1 Barber, 150 ft. from N line and halfway between E and W line of lease, Warraner Sur. ..... Rig up.
Rex Drlg. Co.'s No. 1 J. H. and W. E. McHaney, 350 ft. from E and 350 ft. from S of 80-ac. tract, Henry Hathaway Sur. ..... Moving in material.
Ross et al's No. 1 Fehnear and Thomas, 150 ft. from S line of 6⅝-ac. lease, Charles Alexander Sur. ..... Location.
Roesar and Pendleton's No. 1 J. R. Fenton, 200 ft. from S and center of E and W of 17-ac. lease, Dolores Sanches Sur. ..... Drlg. 2,660 ft.
Roy Roberts et al's No. 1 L. M. Colburn, 150 ft. from E and 150 ft. from S of 45-ac. lease, 5,700 ft. from E and 850 ft. from N of survey, Henry Hathaway Sur. ..... Derrick.
C. Rosenfield et al's No. 1 J. A. Knowles, 700 ft. from E, 1,250 ft. from N. William Lyles Sur. ..... Shut down 2,732 ft.
Rush Bros. et al's No. 1 Arthur Christian, 225 ft. S and 170 ft. E of SE cor. of Randle Christian 32-ac. tract, G. W. Hooper Sur. ..... Location.
Rush Bros.' No. 1 W. M. Harley, 150 ft. from NE and 150 ft. from SE of 10-ac. lease, William Robinson Sur. ..... Drlg. 3,270 ft.
Sabine Oil & Gas Co.'s No. 1 Harris, 3,500 ft. E and 3,500 ft. N of NE cor. of S. Lewis Sur., Mary Van Winkle Sur. ..... Location.
Shasta Oil Co.'s No. 1 Arthur Christian, 161 ft. from S and 415 ft. from W line of 31-ac. lease, Henry Hathaway Sur. ..... Top sand 3,580 ft.; T. D. 3,611 ft.
Shell Petroleum Corp.'s No. 1 J. A. Knowles, 556 ft. from S line and 339 ft. from E line of 65-ac. lease, Allen Moore Sur. ..... Top sand 3,652 ft.; T. D. 3,655 ft.
Smith et al's No. 1 J. B. Doby, 982 ft. from E and 150 ft. from S of 170-ac. tract, William H. Castleberry Sur. ..... Derrick.
E. L. Smith's No. 1 Cole, 893 varas S along E line of Samuel Brooks Sur. from NE cor. of same, thence 107 varas E at right angles, J. Meador Sur. ..... Moving in.
Smitherman and Greer's No. 1 George Jones et al, 330 ft. from S and 359 ft. W of 130-ac. tract and 50-ac. lease, G. W. Hooper Sur. ..... Drlg. 1,265 ft.
Simms Oil Co.'s No. 1 W. M. Harley, 150 ft. NE and 150 ft. from SE of 10-ac. lease, William Robinson Sur. ..... Drlg. in; T. D. 3,500 ft.
Sinclair Oil & Gas Co.'s No. 1 M. T. Cole, 2,640 ft. from N and 2,742.2 ft. from W line of survey, Samuel Brooks Sur. ..... Burning; T. D. 3,661 ft.
Smith Ref. Co.'s No. 1 J. A. Knowles, 150 ft. from S, 150 ft. from NW of 75-ac. tract, 5,200 ft. from W, 7,700 ft. from N, Mary Van Winkle Sur. ..... Derrick.
Sun Oil Co.'s No. 2 J. R. Beal, 192 ft. from N and 250 ft. from E line of lease, W. P. Chisum Sur. ..... Drlg. 1,303 ft.
Sun Oil Co.'s No. 1 G. W. Tate, 250 ft. from N and 250 ft. from E of 64-ac. lease and tract, William H. Castleberry Sur. ..... Set 190 ft. 10-in. csg.
Sutton et al's No. 1 McNeely, 150 ft. from N and 150 ft. from E of 7.75-ac. tract, W. P. Chisum Sur. .... Shut down 1,500 ft.
C. S. Thomas et al's No. 1 C. B. Everett, 300 ft. from N and 200 ft. from E of 30.25-ac. tract, John Ruddle Sur. ..... Derrick.
J. Thomas Cox et al's No. 1 Finley and Thomas, 150 ft. from N line and 150 ft. from W line of 3½-ac. lease and 50-ac. tract, Charles B. Alexander Sur. .... Derrick.
Texas Pacific Coal & Oil Co.'s No. 1 fee, 330 ft. from S and 330 ft. from W tract and survey, George Hampton Sur. ..... Spudding.
Paul Vitek et al's No. 1 Louise Osborne, 150 ft. from E. 150 ft. from S and W 46 acres of 84-ac. tract, 2,400 ft. from W, 450 ft. from S, R. R. Bobbett Sur. ..... Shut down 2,310 ft.
Angeline & Burkett's No. 1 J. G. McGrede, 298 ft. from E and 155 ft. from S of Lot No. 3, Dolores Sanches Sur. ..... Drlg. 2,900 ft.
Wainwright-West Oil Co.'s No. 1 Ben Watson, 150 ft. from E and 181 ft. from N of 18.75-ac. tract and a 3-ac. lease, J. S. Carrithers Sur. ..... Drlg. 2,100 ft.
Wise and Jackson's No. 1 F. J. Glover, 350 ft. from N and 125 ft. from E line of survey, George Melton Sur. ..... Derrick.
H. M. Wages et al's No. 1 Finley and Thomas, 165 ft. from E and 150 ft. from S of 10-ac. lease, Charles H. Alexander Sur. ..... Drlg. water well.
Wise and Jackson's No. 1 Wash Dickey, 330 ft. from S and 200 ft. from E of survey, W. H. Johnson Sur. ..... Drlg. 3,400 ft.
Woodley Petroleum Co.'s No. 1 Laura Walker et al, 175 ft. from E and 235 ft. from S of 45-ac. tract, Dolores Sanches Sur. ..... Drlg. 2,781 ft.
Whitney-Cowanaugh's No. 1 Ben Watson, 300 ft. E of Marine Oil Co.'s No. 1 Art Mitchell, J. S. Cathers Sur. ..... Set 6⅝-in. csg.; T. D. 3,560 ft.
Yount Lee Oil Co.'s No. 1-B R. S. McKinley, 1,993 ft. from S and 2,440 ft. W of NE cor. of 212-ac. tract, William Robinson Sur. ..... Derrick pattern.
Yount Lee Oil Co.'s No. 1 Isaac Denson, 369 ft. from S and 684 ft. from W of 64-ac. tract, Dolores Sanches Sur. ..... Drlg. 2,103 ft.
Yount Lee Oil Co.'s No. 1 C. E. Fenton, 610 ft. from E line and 742 ft. from S line of 84-ac. tract, Dolores Sanches Sur. ..... Rig up.
Yount Lee Oil Co.'s No. 1 Bun Rodden, 610 ft. from N and 215 ft. from W of 22-ac. tract, William Robinson Sur. ..... Drlg. 1,003 ft.
Yount Lee Oil Co.'s No. 1 Thrasher and Stuckey, 209 ft. from N line and 331 ft. from E line of 80-ac. lease, G. W. Hooper Sur. ..... Derrick.

HENDERSON COUNTY

Arcadia Refining Co.'s No. 1 J. M. Dean, 150 ft. from S and 150 ft. from W of 42.75-ac. tract, Simon Boone heirs Sur. ..... Derrick.
Westside Investment Co.'s No. 1 Thornhill, 450 varas from W and 400 varas from N line of survey, James Spivey heirs Sur. ..... Location.

LAMAR COUNTY

K. O. Bundy et al's No. 1 La Gatle, 200 ft. from N and 500 ft. from E of La Gatle tract, John V. Cherry Sur. ..... Moving in rig.
Everett & Allen's No. 1 Guest, 250 ft. S and 2,040 ft. E of 160-ac. tract, L. Roberts Sur. ..... Shut down 2,582 ft.

NACOGDOCHES COUNTY

Fuhram et al's No. 1 Robert Mattaner, NW cor. of 520-ac. tract, J. A. Cherino grant ..... Rig up.
J. C. McNeil et al's No. 1 Hayter estate, 1,000 ft. E of Laco Creek and 300 ft. S of Nacogdoches and Jacksonville Highway De Las Santos-Coy Sur. ..... Set 400 ft. 10-in. csg.

RAINS COUNTY

Berry and Hale's No. 1 Ownsby, 150 ft. N and 1,100 ft. from E of most easterly SE cor. of survey, Alexander Sur. ..... Rig up.
Westbrook Oil Co.'s No. 1 William Cates, 150 ft. N and W of NW cor. of E. S. Knight 46-ac. tract and on Cates 266-ac. tract, Calvin Gage Sur. ..... Drlg. 3,505 ft.

RED RIVER COUNTY

Everett & Allen's No. 1 Bryan, 1,200 ft. SW of NE cor. of Bryan 130 acres, P. Vaughn Sur. ..... Rig up.
Everett & Allen's No. 1 E. Howison, 225 ft. S, 185 ft. W of 79-ac. tract, William Humphreys Sur. ..... Drlg. 800 ft.
Droppleman and Bunely's No. 1 J. W. Cunningham, 250 ft. E and 250 ft. S of 130-ac. tract, S. B. Shi Sur. ..... Cored sand 2,747-56; will make drill stem test.
Pearsons et al's No. 1 J. R. Dellahunty, 500 ft. from N of Isaac Moore Sur. and 200 ft. E of E line of Robert Glass Sur. ..... Drlg. 176 ft.

KILGORE AREA—RUSK COUNTY

Abercrombie's No. 1 E. Cantrell, 740 ft. from W line of Cantrell 53-ac. tract in Robert W. Smith Sur., and 148 ft. from S line ..... Coring 3,631 ft.
Burton Drlg. Co.'s No. 2 E. B. S. Florey, 900 ft. from N line and 115 ft. from E line of 50-ac. tract, Peter Holmes Sur. ..... Set 6⅝-in. csg.; T. D. 3,668 ft.
Burton Drlg. Co.'s No. 3 E. B. S. Florey, 250 ft. out of NE cor. of Burton Florey 50-ac. lease, Peter Holmes Sur. ..... Location.
Cox and Hamon's No. 3 D. M. Peterson, 150 ft. from N and W lines of 40-ac. tract, Isaac Ruddle Sur. .... Moving in material.
Cromwell et al's No. 1 C. J. Bradberry, 565 ft. from S line of Bradberry 112-ac. tract and 154 ft. from E line of Robert W. Smith Sur. ..... Drlg. 3,000 ft.
Curtis and Loe's No. 1 J. S. Bean, 1,650 ft. from S, 200 ft. E of NW cor. of 314-ac. tract and lease, 4,925 ft. from S, 1,075 ft. from W. J. Lewis Sur. .... Drlg. 3,200 ft.
East Texas Refining Co.'s No. 1 Wills, 723 ft. from N and 250 ft. from S, 150 ft. from W of 82.24-ac. lease, W. P. Chisum Sur. ..... Drlg. plug; T. D. 3,692 ft.
East Texas Refining Co.'s No. 2 Wills, 200 ft. from N and 150 ft. from E of 80-ac. lease, W. P. Chisum Sur. ..... Swabbed 100 per cent salt water; T. D. 3,687 ft.
Harry Elliott's No. 1 Carroll, 175 ft. from N and 200 ft. from E of 7-ac. tract, W. R. Cook Sur. ..... Location.
H. W. Elliott's No. 1 Ferrell, 150 ft. from N and 150 ft. from E of 8-ac. tract, W. M. Ryan Sur. ..... Preparing to set csg.; T. D. 3,756 ft.
Elsy Drlg. Co.'s No. 1 George Thompson, 150 ft. from N, 150 ft. from E of tract of 70 acres and 10-ac. lease, 400 ft. S, 500 ft. W, Henry Dobson Sur. ..... Drlg. 2,477 ft.
Gulf Production Co.'s No. 1 Russell, 150 ft. from the N and W lines of the S. R. W. Smith Sur. ..... Rig up.
Helis and Collin's No. 1 Birdsong, 150 ft. S of railroad and midway between the E and W lines of the 5-ac. tract in the I. Ruddle Sur. ..... Set 6⅝-in. csg.; T. D. 3,591 ft.
Houston Production Co.'s No. 1 W. R. Brightwell, 984 ft. N and 287 ft. W of NW cor. of W. Brock heirs 595-ac. tract, E. G. Sevier Sur. ..... Top sand 3,568 ft.; T. D. 3,570 ft.
Houston Oil Co.'s No. 1 Dora Wells, 150 ft. out of NE cor. of 25-ac. lease, Henry Hobson Sur. ..... Drlg. 3,010 ft.
Houston Oil Co.'s No. 1 Brightwell, 150 ft. from N and 150 ft. from E lines of tract, Robert E. Winn Sur. ..... Top sand 3,568 ft.; T. D. 3,570 ft.
Humble Oil & Ref. Co.'s No. 1 R. H. Laird, 150 ft. from N and 200 ft. from E line of 40-ac. lease, Isaac Ruddle Sur. ..... Drlg. 3,578 ft.
Killerman and Hind's No. 1 Brock heirs, 460 ft. S and 150 ft. W of the NW cor. of the Houston Oil Co.'s 20-ac. Brightwell lease, Robert W. Smith Sur. ..... Drlg. 3,250 ft.
Captain Lucey's No. 1 Maxwell, 600 ft. N and 200 ft. W of SW cor. of John Darley Sur. in the E. Collard Sur. ..... Drlg. 3,300 ft.
Lewis and Perkins' No. 1 Brock heirs, 150 ft. from the N and E lines of the R. W. Smith Sur. ..... Drlg. 2,690 ft.
Lewis and Selby's No. 1 Peagues, 150 ft. from the N and W lines of the George Cooper Sur. ..... Drlg. 2,444 ft.
Magnolia Pet. Co.'s No. 1 Bradbury, 150 ft. from the S and E lines of the lease in the N Robert W. Smith Sur. ..... Set 101 ft. 12½-in. csg.
Magnolia Pet. Co.'s No. 2 Dick Wells, W offset to Madden et al's No. 1 Mayfield in the Henry Hobson Sur. ..... Drlg. 2,665 ft.
Magnolia Pet. Co.'s No. 1 Florey, 150 ft. from N and E lines of tract, Peter Holmes Sur. ..... Plugging back.
Moser's No. 1 Buntyn, 554 ft. from N and 335 ft. from E of survey, the most northeasterly cor. of survey, J. C. Snow Sur. ..... Spudded; shut down.
Moody-Seagraves' No. 1 J. Palmer, 150 ft. out of NE cor. of lease, S offset to Markham and Dunning's No. 3 or 5-E Peterson, Robert E. Winn Sur. .. Top sand 3,639 ft.; T. D. 3,679 ft.
Rector and Davis' No. 1 Brightwell, 2,300 ft. from S line and 225 ft. from W line of survey, Robert E. Winn Sur. ..... Location.
Republic Production Co.'s No. 1 Bean, 1,150 ft. from the N and 50 ft. from the W lines of the J. Lewis Sur. ..... Rig up.
Republic Production Co.'s No. 1 Christian, 1,850 ft. from the N and 920 ft. from the W lines of the N. Robert W. Smith Sur. ..... Set 160 ft. 12½-in. csg.
Shell Pet. Corp.'s No. 1 Wills, 200 ft. from N and 200 ft. from W of 182-ac. tract, W. P. Chisum Sur. ..... Set 6⅝-in. csg.; T. D. 3,661 ft.
Sun Oil Co.'s No. 1 Ed Barker, 200 ft. from E and 200 ft. from S of 77-ac. lease, A. M. Ryan Sur. .... Top sand 3,746 ft.; T. D. 3,748 ft.
Sun Oil Co.'s No. 1 Beal, 200 ft. from W and 200 ft. from S of Beal 180-ac. tract, W. P. Chisum Sur. .... Drlg. 3,200 ft.
Sun Oil Co.'s No. 1 A. A. King, 225 ft. out of SE cor. of A. A. King 100-ac. lease, Peter Holmes Sur. ..... Location.
Stanolind Oil & Gas Co.'s No. 1 W. R. Terrell, 327 ft. S and 275 ft. from W of 50-ac. lease, E. G. Sevier Sur. ..... Top sand 3,700 ft.; T. D. 3,704 ft.
Stanolind Oil & Gas Co.'s No. 2 W. R. Terrell, 431 ft. from N and 393 ft. from E line of lease, E. G. Sevier Sur. ..... Drlg. 2,673 ft.
Stanolind Oil & Gas Co.'s No. 1 Beal, 300 ft. from the S and W lines of the lease, W. P. Chisum Sur. ..... Rig up.
Stanolind Oil & Gas Co.'s No. 1 J. S. Powers, 330 ft. from the N and E lines of the John Womack Sur. ..... Set 270 ft. 12½-in. csg.
Stroube and Stroube's No. 1 Lilly Morse, 300 ft. W from East Texas Loan & Investment's No. 1 Lilly Morse, Robert W. Smith Sur. ..... Drlg. 2,855 ft.
Texas Pacific Coal & Oil Co.'s No. 1 C. O. Christian, 330 ft. out of NW cor. of lease, Meredith McCabe Sur. ..... Building derrick.
Weaver-Crim Corp.'s No. 1 Dave Ladd, 150 ft. from the S and W lines of tract, N offset to Woodley's No. 1 Ladd, Henry Robson Sur. ..... Top sand 3,634 ft.; T. D. 3,640 ft.
Woodley Pet. Corp.'s No. 1 George Thompson, 150 ft. from N line and center of E and W lines of Woodley 10-ac. lease of George Thompson 70-ac. tract, Robert E. Winn Sur. ..... Set 6⅝-in. csg.; T. D. 3,620 ft.

JOINER POOL—RUSK COUNTY

Arkansas Fuel Oil Co.'s No. 1 John Whelis, 200 ft. from N and E lines of Whelis tract in R. H. Pinney Sur. ..... Drlg. 80 ft.;
Alford et al's No. 1 W. L. Thrash, 1,103 ft. from N, 420 ft. from E of SE cor., B. Smith Sur. ..... Derrick.
Armstrong and Pitt's No. 1 Cooper, 2,150 ft. from W and 166 ft. from N of survey ..... Drlg. 1,110 ft.
Armstrong's No. 1 Alford, 151 ft. from S and 1,080 ft. from W of survey, T. J. Moore Sur. ..... Derrick.
Big Indian Oil Co.'s No. 1 Deason, 360 ft. from E and 4,100 ft. from S of survey, M. J. Prue Sur. ..... Sidetracking.
Berry-Lewis' No. 1 Thompson, 291 ft. from N and 2,955 ft. from W of M. L. Thompson 129 acres, M. J. Prue Sur. ..... Shut down 1,320 ft.
Campbell Oil Co.'s No. 1 Compton, 600 ft. from N and W line of Simon Del Rio Sur., 1½ miles NW of Minden ..... Location.
Cochran and Smith's No. 1 J. P. Cansler, 150 ft. from S and 1,035 ft. from W of 38.5-ac. tract, E. Collard Sur. ..... Location.

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Consolidated Oil Co.'s No. 3 Jobe, 4,500 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ....T. D. 3,685 ft.
Consolidated Oil Co.'s No. 4 Jobe, 5,025 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ....Swabbed dry through csg.
E. L. Chapman's No. 1 A. P. Finney, 150 ft. from W of E 20 acres of 102-ac. tract, Isaac G. Parker Sur. ....Shut down 3,606 ft. in sand.
Cranfill & Reynolds' No. 1 Cox, 2,100 ft. from E and 1,500 ft. from S of survey, R. H. Pinney Sur. ....Preparing to run csg.; T. D. 3,712 ft.

Dan Brooks, trustee's No. 1 Alford, 1,000 ft. from E and 200 ft. from S of Alford 100-ac. tract, J. R. Reel Sur. ....Drlg. 3,743 ft.
Dan Dillon et al's No. 1 W. H. Frederick (Jake), 150 ft. from E, 150 ft. from S of 50-ac. tract, Juan Ximenes Sur. ....Derrick.
Danciger's No. 1 Deason, 3,925 ft. from S and 650 ft. from W of survey, Juan Ximenes Sur. ....Set 6-in. csg.; T. D. 3,641 ft.
Devonian Oil Co.'s No. 1 Milstead, 200 ft. from S and E lines of J. B. Milstead 90.4-ac. tract in R. H. Pinney Sur. ....Set 12½-in. csg. 200 ft.
Elliott's No. 1 Alford, 445 ft. N and 194 ft. W of most westerly SW cor. of J. P. Maxwell 144-ac. tract, I. G. Parker Sur. ....Drlg. 1,800 ft.
Elzy and Tauteaham's No. 1 Deason, 1,300 ft. from W and 3,700 ft. from S of survey, Juan Ximenes Sur. ..Drlg. 2,310 ft.
Elzy Drlg. Co.'s No. 1 Frederick, 150 ft. from S and 603 ft. from W of Frederick 90-ac. tract, Juan Ximenes Sur. ....Derrick.
Foster and Jefferies' No. 1 Giles, 1,000 ft. from N and 150 ft. from E lines of Giles 90 acres in M. J. Prue Sur. ....Drlg. 2,440 ft.
Green Pine Oil Co.'s No. 1 E. A. Thrash, 150 ft. from S and E lines of Thrash tract in Juan Ximenes Sur. ....Drlg. 1,450 ft.
Gulf Production Co.'s No. 1 T. B. Cashem, 330 ft. from S and E lines of 95-ac. tract in Henry B. Dance Sur. ....Drlg. 2,510 ft.
Gulf Production Co.'s No. 1 O'Quin, 330 ft. from the N and E lines of 54-ac. tract in the George Berry Sur. ....Drlg. 2,751 ft.
Gulf Production Co.'s No. 1 Keeling, 1,550 ft. from E and 3,950 ft. from S of survey, F. Cordova Sur. ....Rig up.
Greely and Baker's No. 1 Thrash, 2,600 ft. from W and 1,850 ft. from N of survey, Juan Ximenes Sur. ....Drlg. 2,200 ft.
Griffith's No. 1 J. F. Lowe, 800 varas E of W line and 200 varas S of N line of 268-ac. tract, William Williams Sur. ....Drlg. 3,210 ft.
Gulf Production Co.'s No. 1 Cash, 6,600 ft. from S and 3,800 ft. from E of survey, F. Cordova Sur. ....Drlg. 3,198 ft.
Haynes et al's No. 1 T. R. M. Lee, 3,300 ft. from W and 5,000 ft. from S of survey, M. J. Prue Sur. ....Set 10-in. csg.; T. D. 58 ft.
John W. Hoosier's No. 1 L. Taliaferro, 1,250 ft. from W and 3,250 ft. from N of survey, Juan Ximenes Sur. ....Sand 3,651-67 ft.; T. D. 3,710 ft.
W. M. Hobson's No. 1 Wilson, 335 ft. from N and 354 ft. from W lines of 31.2-ac. lease in M. J. Prue Sur. ....Derrick.
Humble Oil & Ref. Co.'s No. 1 M. L. Thompson, 6,150 ft. from E and 1,850 ft. from N of survey, M. J. Prue Sur. ....Drlg. 3,006 ft.
Humble Oil & Ref. Co.'s No. 1 Plowman, 163 ft. from S and 1,074 ft. E of NW cor. of M. L. Thompson 129.6-ac. tract, F. Cordova Sur. ....Building derrick.
H. L. Hunt's No. 1 Fair, 150 ft. from N and 180 ft. from W of Fair tract, Richard McAlnulty Sur. ....Set 6-in. csg. 3,642 ft.; T. D. 3,642 ft.
Kimbrough et al's No. 1 Weatherby, 300 ft. from N and 300 ft. from E. Robert Martin Sur. ....Drlg. 3,200 ft.
E. C. Laster's No. 1 Daisy Bradford, 150 ft. from E. 150 ft. from S of Lot 14, Juan Ximenes Sur. ....Location.
Laster et al's No. 1 Maxwell, 3,000 ft. from E and 625 ft. from N of survey, I. G. Parker Sur. ....Sand 3,552-66 ft.; total depth.
Luling Oil & Gas Co.'s No. 1 Frederick, 4,300 ft. from W and 1,425 ft. from N of survey, Juan Ximenes Sur. ....Swabbed dry; won't flow; shut down.
Madden et al's No. 1 Mose Mayfield, 360 ft. from S and 160 ft. from W line of 154-ac. lease, Daniel Clark Sur. ....Waiting on csg.; T. D. 3,708 ft.
Mass and Tucker's No. 1 Matthews, 3,244 ft. from N, 4,356 ft. from E. Dalines Cartimas Sur. ....Drlg. 3,087 ft.
Moss and Urschel's No. 2 Mayfield-Alford, 211 ft. from S and 790 ft. from W of lease, Juan Ximenes Sur....Top Georgetown lime 3,747-50 ft.; preparing to swab.
G. B. Mitchell et al's No. 1 Ras Pool, 2,700 ft. from E and 4,275 ft. from N of survey, M. J. Prue Sur. ...Shut down 3,551 ft.
J. R. McMurray's No. 1 Blackwell, 365 ft. from S and 159 ft. from W of Blackwell 93-ac. tract, M. J. Prue Sur. ....Drlg. 3,300 ft.
National Drlg. Co.'s No. 1 Young, 585 ft. N and 158 ft. W of NW cor. of Lide-Rowe's 30-ac. lease, M. J. Prue Sur. ....Drlg. 2,890 ft.
Nat Saddler's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ....Set 8-in. csg.; T. D. 1,267 ft.
Olsen Bros.' No. 1 W. P. Brett, 2,350 ft. from E and 975 ft. from N of survey, M. J. Prue Sur. ....Drlg. 2,210 ft.
Pace et al's No. 1 Deason, 730 ft. from N and 152 ft. from W of Deason east 52-ac. tract, M. J. Prue Sur. ....Drlg. 1,800 ft.
Pilot Oil Co.'s No. 1 J. E. Thrash, 205 ft. from N and 650 ft. from E of 62-ac. tract, F. Cordova Sur. ....Drlg. 600 ft.
G. Pollard's No. 1 Young, 586 ft. S and 182 ft. W of NW cor. of Lide 30-ac. lease, M. J. Prue Sur. ....Shut down 2,614 ft.
Pharis and Sampie's No. 1 Deason, 1,558 ft. E and 155 ft. S of SE cor. of H. Brooks tract in M. J. Prue Sur. ....Drlg. 3,050 ft.
Phillips Petroleum Co.'s No. 1 Alford, 3,700 ft. from W and 60 ft. from S of survey, I. G. Parker Sur. ...Swabbed, will not flow; shut down.
Phillips Petroleum Co.'s No. 1 Wilson, 142 ft. from E and 135 ft. from S of Phillips 51-ac. tract, M. J. Prue Sur. ....Drlg. 2,332 ft.
Pioneer Oil Co.'s No. 3 Thrash, 1,275 ft. N along E line of A. Thrash 71-ac. tract from SE cor. of same and 485 ft. W at right angles to E line, M. J. Prue Sur. ....Derrick.
Pioneer Oil Co.'s No. 4 Thrash, 1,900 ft. from E and 4,725 ft. from S of survey, M. J. Prue Sur. ....Location.
George Ray et al's No. 1 Thompson, 6,200 ft. from E and 1,600 ft. from N of survey, M. J. Prue Sur. ....Set 6-in. csg. 3,638 ft.; T. D 3,640 ft.
W. G. Ray Drlg. Co.'s No. 1 Wilson, 335 ft. from S and 240 ft. from W of lease, Richard McAnulty Sur. ....Drlg. 3,585 ft.
Ramsey Petroleum Co.'s No. 1 Kangerga, 150 ft. E and S from most southern SE cor. of Walker Pettett Sur., 3 miles W of Cappe and Smith's No. 1 Cochran ....Shut down 3,712 ft.
Rowe et al's No. 1 Maxwell, 855 ft. from E and 237 ft. from S of B. F. Maxwell 59-ac. tract, R. H. Pinney Sur. ....Derrick.
Robertson Drlg. Co.'s No. 1 Deason, 3,400 ft. from S and 1,800 ft. from W of survey, Juan Ximenes Sur. ....T. D. 3,630 ft.; set 6-in. csg. 3,600 ft.
Roeser and Pendleton's No. 1 Glenn Pool, 1,170 ft. from N and 200 ft. from E of 31-ac. lease, M. J. Prue Sur. ....Preparing to run tubing; T. D. 3,740 ft.

Rusk County Oil Co.'s No. 1 Robertson, 150 ft. from N along W line of George Guthrie Sur. from SE cor., 150 ft. W of E line of Robertson 20-ac. tract, R. H. Pinney Sur. ....Drlg. 2,785 ft.
Southern Crude Oil Purchasing Co.'s No. 1 C. Smith, 330 ft. from S line and 150 ft. from E line of lease, William Killen Sur. ....Location.
Stokes et al's No. 1 Mrs. M. M. Talley, 4,100 ft. from W and 1,050 ft. from N of survey ....Moving in rig.
Sun Oil Co.'s No. 1 S. A. Selman, 150 ft. from N and 150 ft. from E of 50-ac. tract, M. J. Prue Sur. ....Set 6-in. 3,660 ft.; T. D. 3,689 ft.
Shaw Oil Co.'s No. 1 Ras Pool, 1,630 ft. from N and 153 ft. from E of Pool tract, M. J. Prue Sur. ....Drlg. 3,560 ft.
Shaw Oil Co.'s No. 1 Taliaferro, 150 ft. from S and 643 ft. from W of Taliaferro 52-ac. tract, Juan Ximenes Sur. ....Drlg. 3,518 ft.
Sinclair Oil & Gas Co.'s No. 1 Wilson, 335 ft. from N and 354 ft. from E of lease, Richard McAnulty Sur. ....Drlg. 2,910 ft.
Suttle's No. 2 Holland, 156 ft. from N and 152 ft. from W of Holland 41.7-ac. tract, M. J. Prue Sur. ....Drlg. 800 ft.
Turman and Swift's No. 1 S. E. Sanders, 712 ft. S and 164 ft. E of NW cor. of 55.1-ac. tract, T. J. Martin Sur. ....Drlg. 2,602 ft.
Vitek's No. 1 Jobe, 2,950 ft. from W and 3,260 ft. from N of survey, Juan Ximenes Sur. ....Drlg. 2,546 ft.
Ward Oil Co.'s No. 1 Finney, 163 ft. from E and 150 ft. from S of survey, F. Cordova Sur. ....Set 6-in. csg. 3,647 ft.; T. D. 3,719 ft.

SMITH COUNTY

Big Indian Oil Co.'s No. 1 Mills, 1,045 ft. E along S line of C. Mills 67.8-ac. farm, SW cor. of same and 710 ft. N at right angles to S line of 67.7 acres, J. Jordan Sur. ....Derrick.
G. B. Bunte, trustee's No. 1 A. S. Jarvis, 150 ft. from S and 150 ft. from W of 267-ac. tract, Juan Vargus Sur. ....Rig up.
Dumas' No. 1 Cooke, 1,558 ft. SE along center line of Highway No. 64 from point where S. S. Cooke 17.6-ac. tract W line intersects highway and 942 ft. at right angles to road, James Jordan Sur. ....Derrick.
East Texas Ref. Co.'s No. 1 Tyiska, 200 ft. from E and 200 ft. from S of survey, R. Wilson Sur. ....T. D. 3,035 ft.
Joiner et al's No. 1 W. W. Wright, 847.5 varas from E and 647 varas from S of NW Wright 225-ac. tract, Van Sickle Sur. ....Reaming 3,200 ft.
Morrison's No. 1 I. Roy, 330 ft. N and E from SW cor. of 87-ac. tract in Henry Cools Sur. ....Drlg. 1,345 ft.
Sinclair Oil & Gas Co.'s No. 1 Armond Wiley, 1,163 ft. from N and 3,140 ft. from W of 312.11-ac. lease, James Jordan Sur. ....1,200 bbls. oil and 2,000 bbls. salt water; plugging back.
Sinclair Oil & Gas Co.'s No. 1 Mayfield, 2,194 ft. from N and 3,625 ft. from W of 376-ac. Mayfield lease, James Jordan Sur. ....Derrick.
Sinclair Oil & Gas Co.'s No. 2 Mayfield, 855 varas from N and 758 varas from W of Mayfield 376.4-ac. tract, James Jordan Sur. ....Drlg. 3,250 ft.
Sun Oil Co.'s No. 1 J. J. Denton, 250 ft. from the N and 288 ft. from E lines of 114.2-ac. tract in Juan Vargas Sur. ....Derrick.
The Texas Company's No. 1 Blackwell, 330 ft. from S and 330 ft. from W of Blackwell 100-ac. lease, James Jordan Sur. ....Drlg. 3,400 ft.
Thayer & Rogers' No. 1 Willingham, 150 ft. N and W of 14.5-ac. tract, Jacob Hernin Sur. ....Shut down 2,400 ft.
Winona O. & G. Co.'s No. 1 Freeman, 150 ft. from S, W of 89-ac. tract in A. J. Legrone Sur., 4 miles SE of Winona ....Shut down 3,651 ft.
Witherspoon Oil Co.'s No. 1 T. O. Wright, 150 ft. from NE cor. of Sinclair-Wilson lease, 1,340 ft. from W and 225 ft. N at right angles, Juan Vargas Sur. ....Sand 3,666-72 ft.; set 6-in. csg. 3,630 ft.

UPSHUR COUNTY

Arcadia Refining Co.'s No. 1 R. S. Johnson, 1,000 ft. from N and 1,000 ft. from E of survey, J. H. Mallory Sur. ....Derrick.
Brennan and Wood's No. 1 Robertson, center of Robertson 41-ac. tract, Ira Stephenson Sur. ....Drlg. 3,100 ft.
J. W. Green's No. 1 J. W. Wooden, 200 ft. from E and 200 ft. S of survey, Isham Williams Sur. ....Derrick.
Mudge Oil Co.'s No. 1 J. D. Richardson, 150 ft. from E and 150 ft. from S of most eastern SE cor. of 100-ac. tract, David Ferguson Sur. ....Sand 3,710-15 ft.; T. D. 3,715 ft.
E. R. Perkins et al's No. 1 Kay, 660 ft. from S and 660 ft. from W of survey, Thomas J. Elliott Sur. ....Shut down 200 ft.

VAN ZANDT COUNTY

T. Daniels' No. 1 Fannie Cumbine, 185 ft. S and 175 ft. E of NW cor. 156-ac. tract, John Wright Sur. ....Temporarily abandoned.
Dennis Oil Co.'s No. 1 C. W. Morris, 100 ft. from N and 300 ft. from E line of Morris 160-ac. tract in C. L. Morris Sur., 5 miles SE of Ben Wheeler ....Temporarily abandoned.
J. C. Fare's No. 1 P. S. Hand, C of Hand's 50-ac. tract, William Shuman Sur. ....Fishing 5,160 ft.
H. Helms et al's No. 1 Bogue, 647 ft. W and 155 ft. S of SE cor. of J. M. Brown 70-ac. in Marshall University Sur., SE of Van ....Shut down 3,098 ft.
Humble Oil & Ref. Co.'s No. 1 A. Dowdle, 1,027 ft. N of S line and 150 ft. E of W line, William Daniel Sur. ....Temp. abnd. 2,987 ft.
Humble Oil & Ref. Co.'s No. 1 York, 150 ft. from E and 175 ft. from S, William Daniel Sur. ....Drlg. 2,050 ft.
Imperator Oil Co.'s No. 2 G. W. Carter, 175 ft. from S and 35 ft. from W of G. W. Carter 171-ac. tract, William Daniel Sur. ....Shut down.
Kelly Oil & Gas Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ....Shut down 2,300 ft.
Neil McMehory's No. 1 R. V. Murphy, 150 ft. from N and 150 ft. W of survey, H. Bailey Sur. ....Shut down 2,450 ft.
Pure Oil Co.'s No. 3 Ella York, 250 ft. S of N line and 250 ft. E of W line, John Walling Sur. ....Cement setting 2,838 ft.
Pure Oil Co.'s No. 2 Shivers, 200 ft. S of N line and 200 ft. E of W line of lease, John Walling Sur. ....Location.
Pure Oil Co.'s No. 3 W. H. Cook, 200 ft. W of most easterly E line and 150 ft. from line running in NE and SW directions, Mund Gross Sur. ....Drlg. 1,450 ft.
Pure Oil Co.'s No. 4 A. G. Mayfield, 1,163 ft. N of S line and 250 ft. E of W line in Nacogdoches County School Land ....Drlg. 1,008 ft.
Pure Oil Co.'s No. 5 C. H. Cannon, 70 ft. S of N line and 150 ft. W of E line of 4-ac. tract in John Walling Sur. ....Drlg. 1,774 ft.
Pure Oil Co.'s No. 3 R. C. Crim, 250 ft. N of S line and 250 ft. W of E line of lease in Nacogdoches County School Land Sur. ....Drlg. 1,130 ft.
Pure Oil Co.'s No. 6 F. B. Smith, 250 ft. S of N line and 200 ft. W of E line of lease in John Walling Sur. ....Location.
Pure Oil Co.'s No. 1 B. W. Russell, 650 ft. W of E line and 150 ft. S of N line of lease in David Rose Sur. ....Location.
Roy Stumpff's No. 1 Riggs, 169 ft. from E and 155 ft. from S of 3-ac. tract, William Daniel Sur. ....Derrick (rotary).
Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. ....Shut down 1,028 ft.

WOOD COUNTY

Loche & Clark's No. 1 A. C. Pick, 165 ft. S of NE cor. G. C. Reeves 25-ac. tract, Daniel Fuller Sur. ....Shut down 997 ft.

Use of Liquefied Hydrocarbon Gases

Dr. J. B. Garner Believes Economic Features Warrant Large Gas Companies Adopting That Method of Manufacture

By Dr. J. B. Garner*

Prior to 1917, the liquefied hydrocarbons—butane, iso-butane and propane—now commodities of great commercial importance—were objects solely for study in the scientific laboratories. Various synthetic and analytic processes, requiring expensive raw materials and entailing fine technical skill, were used in the preparation of minute quantities of these hydrocarbons in the gaseous form. There was little or no thought of ever producing these substances in such large quantities that tank cars, tankers and pipe lines would be required for delivery of them to points of mass consumption. Such a thought would have been akin to a dream or a vision. During the past 13 years, remarkable progress has been made. Research and development work, the opening up of large and productive areas of natural gas and oil, and the marvelous inventive genius of petroleum technologists in perfecting processes and apparatus for the cracking of oil—all these have contributed to the birth and growth of the so-called liquefied petroleum gas industry—the powerful ally of the two great public serving industries—gas and petroleum. The speaker welcomes this opportunity of addressing you on the subject "Liquefied Petroleum Gases, Our Mutual Problem."

So much has been said and written relative to the sources of supply of these hydrocarbons, their physical properties and their chemical possibilities, that the present discussion will be limited to a brief review of the salient features of supply and production, and the pertinent physical properties which are of prime significance to the gas and petroleum industries. The time allotted does not permit of even a general discussion of the value of these hydrocarbons to the chemical industry.

Sources and Supply

There are two sources of commercial quantities of butane, iso-butane and propane: (1) Natural gas as it is delivered from natural gas and oil wells; and (2) refinery gases as they are produced in cracking operations.

The quantities of these hydrocarbons, which will be recoverable from the two sources of supply, will depend upon: (1) the volume of gas available for treatment; (2) the content of these hydrocarbons in the gas as treated; and (3) the sale value when recovered.

Suffice it to say, that the volumes of the gases available for treatment and the content of hydrocarbons in these gases are equal to, and adequate for, all possible market requirements. The processing of these gases for the isolation of the liquefied hydrocarbons will be contingent upon whether it is worth while or not. We have no misgivings regarding the availability of the supply. Our concern is, "will it pay the natural gas and petroleum industry to isolate and market these hydrocarbons as commodities?" The supply is available on a sound, economic basis. The demand must be certain and regular if production costs are to be held at a low figure. The gas industry must likewise find it, not only profitable, but also progressive, to utilize these hydrocarbons for domestic and the manifold and varied industrial purposes.

Methods of production

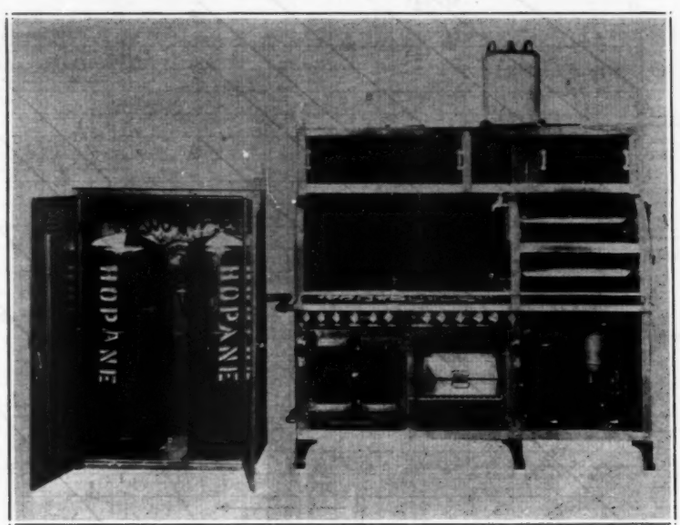
There are three well known methods of isolating or producing the liquefied hydrocarbon gases in a high state of purity from natural and refinery gases:

1. The Absorption Method. This method involves the use of solid adsorbents, like activated charcoal and silica gel, for selectively condensing the desired hydrocarbons from the gas stream, subsequent distillation, compression, cooling, and fractionation;

2. The Absorption Method. This method involves the use of a suitable liquid solvent for dissolving these hydrocarbons from the gas stream, subsequent distillation, compression, cooling and fractionation; and

3. The Mechanical Method. This method involves the use of machines wherein very low temperatures and high pressures may be realized in liquefying a mixture of the desired hydrocarbons and subsequent fractionation thereof.

The method employed most generally is the so-called absorption method. The purity of the products depends upon the raw material, and the refinement and efficiency of the process and apparatus used. If the raw material contains hydrogen sulphide, organic sulphur or corrosive elements or compounds, these materials must be removed by accessory processes and equipment. The art of production has so advanced that it is commercially possible and practicable to obtain the several separate hydrocarbons of 97 or higher percentage purity.



Liquefied gas installation.

Important Physical Properties

A brief compilation of the industrially important physical properties of two commercially known liquefied petroleum gases—"S-O-Tane" and "Hopane"—has been made in Figure 1.

It is imperative that the producer and consumer of liquefied petroleum gases shall have a knowledge of these physical properties so as to enable them to solve the problems which may arise: (a) in the production of the hydrocarbons; (b) the provision of safe storage; (c) shipping containers and appliances; (d) loading and unloading of shipping containers; (e) transportation; (f) satisfactory pumps and compressors; and (g) efficient methods of transfer and distribution around local plants to points of utilization.

Objections Answered

Many executives of public utilities have expressed curious fear that the use of these hydrocarbons in air or other inert gas dilution plants may result in troublesome condensation or drip problems. The accompanying curves, showing relationships of dewpoint—pressure—temperature—concentration of propane, normal butane and iso-butane, will be informative and helpful as well in alleviating these fears. By dewpoint is meant the temperature at which one of the constituents of a gaseous mixture will begin to condense.

Some executives and a few engineers have been concerned with the hazards which will attend the use of these liquefied hydrocarbon gases as raw materials in supplying gaseous fuel to the residents of villages, towns and cities. In case of leakage, the gases, per se, are physiologically nonpoisonous; they have a distinct and characteristic odor, readily and easily detected. The gases do not stratify near the floor or in basements. They diffuse as all other gases do in any confined space. The explosive ranges of these gases are less extensive than those of any other commercial gases, and higher kindling temperatures are required to ignite mixtures of the gases and air. The gases do not have any corrosive constituents and are therefore without any action upon materials employed in production, transportation, or utilization. The use of these gases, therefore; (1) does not necessitate the introduction of a foul odorant; (2) unusual means of ventilation are unnecessary; and (3) hazards to life and property are minimized.

The accompanying figure graphically represents not only the inflammability limits of commercial gases, but also the extent of the hazards of their usage:

From the viewpoints of: Sources of supply, methods of production, physical properties, and means of transportation and distribution, the geographic availability and continuity of service to consumers are assured.

Transportation and Distribution

Cylinders, tank wagons, tank cars, barge tankers and pipe lines are now utilized in the transportation and distribution of liquefied gases.

The cylinders in use are of various types, designs, and sizes. The most commonly used sizes are those having capacities of 40, 60 and 100 pounds of liquid. The so-called 40-pound cylinder is in extensive usage in the steel industry, wherein propane is transported to market and utilized in a highly efficient, safe, and satisfactory manner in steel cutting and preheating operations. The 60 and 100-pound cylinders have found extensive and satisfactory usage in the transportation of propane and butanes, as well as various mixtures of these, for use as domestic and minor industrial fuel gases.

Special tank wagons are used in several localities, noteworthy on the Pacific Coast, in making bulk deliveries to inland towns and cities not located on railroads.

Tank cars of two classes, designated by Bureau of Explosives as Class 104-A and Class 105-A-400, are generally and rather widely used in interstate shipments of butane and propane, respectively. By special approval of the Bureau of Explosives, the latter class of cars may be used for both commodities. These tank cars have an approximate capacity of 10,500 gallons of water and may be utilized in the shipping of approximately 10,000 gallons of both commodities. The actual amount in pounds which may be shipped is governed by the specific gravity, at 60° F., of the liquefied hydrocarbon and the water weight capacity of the car. The amount of butane which may be shipped is 54 per cent of the water weight, and the amount of propane which may be shipped is approximately 46 per cent of the water weight capacity. Both classes of tank cars have no bottom outlet. All of the loading, unloading, gauging and temperature measuring devices are located in the dome of the cars and are protected by heavy housing. The liquid and vapor lines are equipped with weighted check valves which seat upwardly. This safety provision eliminates the hazard of the escape of the contents of the car in case the valves or fittings are damaged or accidently broken. The Standard Oil Co. of New Jersey, through its subsidiary, the Hope Construction & Refining Co., uses only one type of car; namely, the Class 105-A-400, for interstate shipments of both liquefied gases. The extra investment required is more than compensated for in the high safety factor and the elimination of outage losses. The safety valves on these cars are vapor proof at

(Continued on Page 100)

FIGURE 1—INDUSTRIALLY IMPORTANT PHYSICAL PROPERTIES

	Liquefied petroleum gases—	S-O-Tane "butanes" Gas	Hopane "propane" Gas
1.	Normal state @ 60° F. and 30" mercury	2.07	1.52
2.	Specific gravity of gas (air = 1)	0.459	0.473
3.	Specific heat of gas at constant pressure—B.t.u. per pound	1.9	2.4
4.	Limits of inflammability, per cent of gas—lower limit	8.5	9.5
	Upper limit	3,255	2,502
5.	Gross heating value per cubic foot @ 60° F. and 30" mercury	6.54	8.59
6.	Cubic feet of gas per pound of liquid	0.574	0.51
7.	Specific gravity of liquid 60°/60° F.	4.78	4.25
8.	Pounds per gallon at 60° F.	31.27	36.51
9.	Cubic feet per gallon	0.001045	0.00143
10.	Mean coefficient of expansion—0° to 50° F.	0.001205	0.00180
	50° to 100° F.	162.2	183.1
11.	Heat of vaporization—B.t.u. per pound	775.7	778.2
	B.t.u. per gallon of liquid at 60° F.	21,300	21,500
12.	B.t.u. per pound of liquid	101,800	91,370
13.	B.t.u. per gallon of liquid		
14.	Vapor pressure of liquid—pounds per square inch (gauge) @—		
	10° F.	1	32
	32° F.	8	68
	60° F.	24	98
	80° F.	38	134
	105° F.	62	192
	130° F.	93	269
15.	Cubic feet of air required for complete combustion 1 cu. ft. gas	31.1	23.81

*Before New England Gas Association, February.

Methods of Computing Orifice Sizes

Cut and Try Method of Assuming a Value for Efficiency Was Never Popular and Results Not Sufficiently Accurate

By L. K. Spink
Manager, Flow Meter Division, The Foxboro Co.

For a good many years the problem of solving for the value of orifice plate diameter to suit given conditions has been a troublesome one. The cut and try method of assuming a value for efficiency, computing the value of d/D and checking through again using a newly determined value of E until the final result checked within a satisfactory percentage, was never popular. It involved too much work, and the results obtained were not sufficiently accurate without a great many repeated operations.

As far back as 1924 I was receiving requests for a solution of the flow equation which would permit solving for the correct orifice size in a single mathematical operation. One large oil and gas company wished to standardize on orifice sizes so cut that, under given conditions of flowing temperature, specific gravity, temperature base, and pressure base, the coefficients would be expressed in even, round numbers; such as 10, 20, 30, 40, etc., cubic feet per hour. If this result could be obtained, it would simplify chart department calculations to a very marked degree. This company requested that the flow equation containing the empirical equation for the value of E be solved in order that a direct calculation of the value of orifice diameter could be obtained. This idea was tried out, but the result was a quadratic equation, the solution of which involved greater effort than the use of the cut and try method. The scheme was then abandoned.

The next development was an attempt to put the flow equation into such form that it would be a direct function of one of the unknown quantities, i.e., d or d/D.

I found that dividing the equation for the coefficient by the square of the line size gave a result which contained a number of known quantities multiplied by E times $\frac{d^2}{D^2}$. The value of E is a function of $\frac{d}{D}$ as well as the value of $\frac{d^2}{D^2}$. This quantity could then be plotted against the value of $\frac{d}{D}$, giving a curve which could be used regardless of size of line.

The next problem was to put this curve in such form that it could be read. If it could be read to three places, it would be satisfactory, but the ultimate desire was to have a curve which could be read accurately to four places. This could not be obtained by the use of a single graph on standard co-ordinate paper of any reasonable size. It was found that by plotting the curves in segments on a series of sheets, the desired degree of accuracy could not only be attained but could be exceeded.

Instructions for Using Curves

To save space, the curves have been plotted on superimposed co-ordinates. The figures adjacent to each section represent the ordinate and abscissa of that particular section. Horizontal arrows show that the figures near them represent the horizontal or d/D scale. Vertical arrows show that the figures near them represent the vertical or c/D^2 scale.

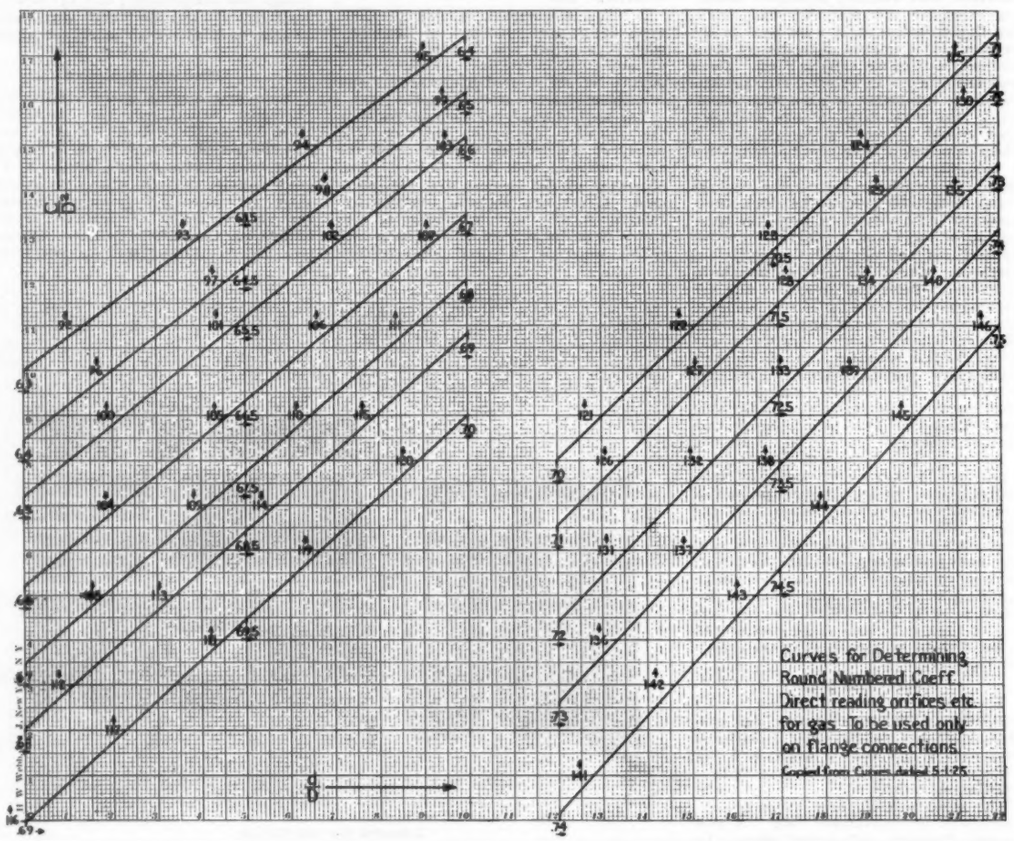
For illustration, the point A on Sheet 1 has been marked with a cross (x). At this point, $c/D^2 = 38.3$ and $\frac{d}{D} = 42.73$.

The curves, while they were worked up in May, 1925, have never been put out for general distribution. Nevertheless, many of the large oil and gas companies have been using them for a number of years and are unanimous in the statement that they are one of the greatest labor savers at their disposal.

The following is a brief outline of their method of use:

Suppose it is desired to arrive at the size of orifice which will give a coefficient of value A under operating con-

(Continued on Page 170)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Design of Gas Distribution System

Discussion of Underlying Principles Involved in the Conversion to Natural Gas in the Denver, Colo., Area

By Charles A. Harrison
Henry L. Doherty & Co.*

A discussion of the principles underlying the design of the gas distribution system in Denver should perhaps be opened with a brief story of the development of this system. When Henry L. Doherty took over the operation of Denver gas utility in 1902, the distribution system was of the ordinary low pressure type, composed of 4-inch and 6-inch iron mains or larger, supplied directly from the gas works, where the maximum pressure was that supplied by the works holder.

His studies indicated that 2-inch mains would give adequate service at much lower investment per customer if the permissible pressure drops could be increased. This would be possible if the works pressures could be increased. The installation of house regulators upon the services in the neighborhood of the gas works made it possible to carry higher pressures. It was found that after making due allowance for the cost of boosting the gas pressures and installing the house regulators that the use of 2-inch mains was more economical than larger mains, so this plan was followed as the city expanded.

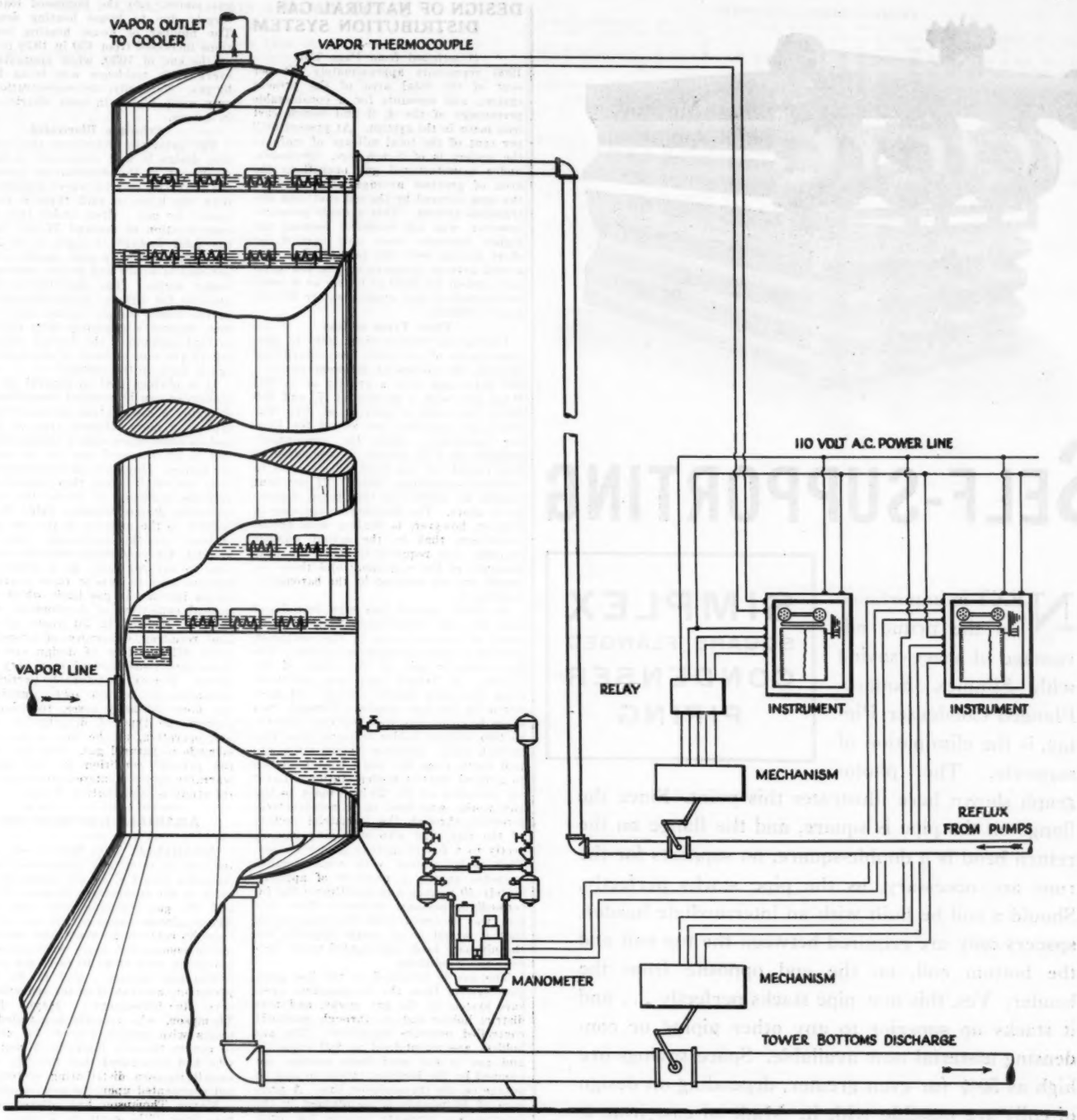
Since the higher pressures were required only on the peak hours, the pressures were raised and lowered as required to render service at the lowest pressure point. This plan avoided excessive average pressures and resulting leakage. As the system expanded further and the load developed, the 2-inch mains were reinforced with larger feeder mains as required. Eventually additional holder capacity was required to avoid excessive generating capacity investment. This holder capacity was installed in an outlying load center and the required pressures were supplied from this district holder station to the adjacent area. The district holder was filled on off peak hours through the distribution mesh. There was no sectionalization of the distribution system except by natural barriers such as rivers and parks.

As additional holder capacity was required a unit of 500,000 feet was agreed upon as a reasonably economical unit from the standpoint of distribution operation expense. At present there are five district holders of 500,000 feet each, in addition to the gas works holder with a capacity of 720,000 feet, which acts as a distribution center for the area adjacent to it. At each holder station the pressures are controlled manually so that at all times the pressure at the lowest pressure point in its district is adequate for good service. The operator is informed in regard to the pressure at the low pressure point by the use of a telemetric recording gauge. The pressure delivered to the mains at each district station varies from hour to hour and day to day in accordance with the varying demands of the customers in the particular area supplied. The above story of the development of the distribution system explains to a considerable extent the method of operating the system.

The area supplied by the system in

(Continued on next page)

*Before American Gas Association Distribution Conference, Cincinnati, Ohio.



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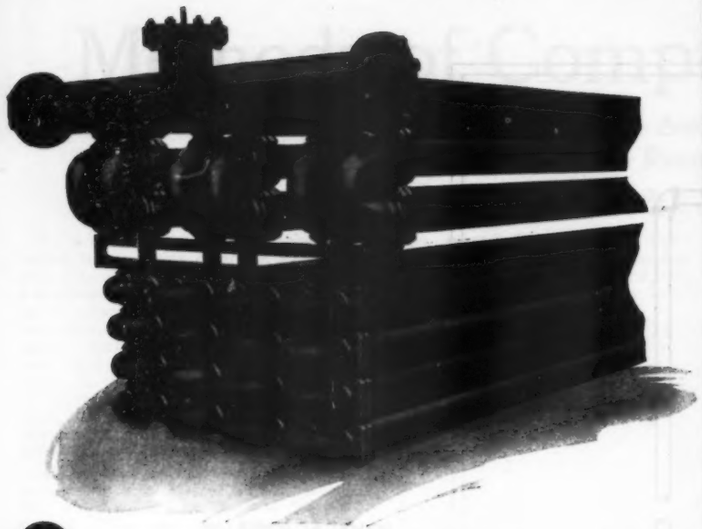

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DESIGN OF NATURAL GAS DISTRIBUTION SYSTEM

(Continued from Page 116)

1903 represents approximately 20 per cent of the total area of the present system, and accounts for a considerable percentage of the 4, 6 and 8-inch cast iron main in the system. At present 60.2 per cent of the total mileage of main in the system is of 2-inch size. Obviously, under manufactured gas operations the area of greatest average pressures was the area covered by the old cast iron distribution system. This average pressure, however, was not excessive because the higher pressures were only carried for short periods over the peak loads. The actual average pressure on the low pressure system for 1930 as nearly as it could be determined was approximately 15-inch water column.

Three Types of Gas

During the period from 1903 to date three types of gas have been distributed through the system at different periods; 495 B.t.u. gas with a gravity of .5, 333 B.t.u. gas with a gravity of .7, and 836 B.t.u. gas with a gravity of .67. The above gas qualities are actual for Denver conditions, where the atmospheric pressure is 12.2 pounds as compared to 14.7 pounds at sea level. To correct to standard conditions (60-30) 21 per cent should be added to the B.t.u. figures given above. The distribution engineer in Denver, however, is dealing with actual conditions, that is, the actual number of cubic feet required to meet the heat demands of the customers and these demands are not reduced by the barometric conditions.

In 1928 natural gas was introduced into the gas distribution system. The point of delivery was in the southeast portion of the distribution system. The gas works is west of the center of the system. A 20-inch main was laid west from the town border station and then north to the gas works. Through two short branches gas was delivered directly to two district holder stations from this 20-inch main. Another 20-inch main was laid north from the town border station to a third district holder station. Later an extension of the 20-inch main to the gas works was laid in a northeasterly direction through the industrial section of the city, and also supplying gas directly to a fourth district holder station. This main system with some smaller branches carries a pressure of approximately 40 pounds and constitutes the intermediate pressure system. This system was designed with the expectation that it would be of ample capacity for the ultimate loads anticipated under natural gas conditions.

The gas is admitted to the low pressure system from the intermediate pressure system at the gas works, and four district holder stations through manually controlled pressure regulators. The gas holders are maintained at full capacity, and gas is not used from storage nor pumped by the boosters except in case of outage on the transmission line. A pressure of 40 pounds is maintained in the intermediate pressure system for pressure storage at present, as a materially lower pressure could be carried in so far as line drop requirements are concerned. Since the transmission line pressures at the town border station are always in excess of 40 pounds, this pressure can be maintained at no pumping cost to the distributing company.

In addition to the district holder stations, gas is supplied to the distribution mesh through one automatically loaded pressure regulator station. Also there are two small isolated sections of the distribution system supplied through automatically loaded pressure regulators.

Under natural gas conditions there has been a large increase in the use of gas for all purposes, particularly for house heating. Maximum daily sendout has increased from 13,000,000 feet in 1928 to 31,112,000 feet in 1930, an increase of 500 per cent on a heat unit basis. At the time of conversion to natural gas, practically every home on the gas mains was utilizing gas. There was one customer for each 4.2 population indicating that the populated area within the city limits was rather thoroughly served with gas mains. So the increased load was largely due to house heating demands. The number of house heating installations increased from 430 in 1928 to 9,075 at the end of 1930, when approximately every fifth residence was being heated by gas. Naturally, the concentration was very much higher in some districts than in others.

Principle Illustrated

The principle underlying the distribution design is well illustrated in the development of the distribution system in the Park Hill district where slightly more than one home in each three is entirely heated by gas. Even under this heavy concentration of demand 77 per cent of the total footage of main is of 2-inch size, representing supply mains, and 23 per cent is 4-inch and larger representing feeder mains. The distribution design provides for utilizing high pressure drops in the 2-inch supply mains, and, therefore, secures a relatively high efficiency in that portion of the system representing 77 per cent or more of the total footage of main in the system.

It is obvious that in general no great economies can be realized immediately in changing a distribution system from one type to a more efficient type of design, and in some cases such a change may result in an increased cost for the immediate future. However, all distribution systems are small before they become large, and the economy or waste due to distribution design becomes large in proportion to the increase in the size of the system. At this particular time many systems are confronted with the conversion to natural gas. As a result these systems may in two or three years take on an increase in gas loads which under normal conditions of development would only be realized in 20 years or more. The resulting economies of adopting a more efficient type of design are under these conditions realized in a very short period. It may, therefore, be particularly advantageous, as my own organization has done in many cases, to completely change the type of distribution design and operation, at the time a conversion is made to natural gas. For this reason the present condition in the industry warrants unusual interest and most careful study of distribution design.

AMARILLO GAS REDUCED

AMARILLO, Tex., May 2.—A sweeping cut in rates was announced by the Amarillo Gas Co. as the latest development in the controversy between the city and the gas company over local rates. The maximum domestic rate was reduced from 38 cents to 27 cents and the schedule to commercial users was lowered on a varying scale from 10 to 20 per cent.

The gas company, said R. E. Werz, president, was forced to the reduction "to save its investment." Mayor Ernest Thompson, who recently negotiated contracts with outside sources for delivery of gas to the city limits at 5 cents and who had announced that the city would install its own distributing system, had not commented upon the new schedule.

Mayor Thompson had offered a city rate from 22½ cents to 7 cents. The new schedule by the gas company ranges from 27 cents to 8 cents.

BIDS ON TEAPOT REPAIRS

CASPER, Wyo., May 2.—Bids on repairs for the 11 wells on Naval Petroleum Reserve No. 3, Teapot Dome, were opened at the office of the Inspector, Com. A. A. Baker (CEC), United States Navy, in Casper. H. V. Meabon was the lowest bidder, his offer to do the work being for $13,750. The bids will be forwarded to the Bureau of Yards and Docks, Navy Department, Washington, D. C., where award will be made and contract let.

Following is a schedule of the bids submitted:

H. V. Meabon, Casper, Wyo., $13,750.

Rash, Rathvon & Hogan, Casper, Wyo., $31,250 and $28,000.

Teague & Coon, Aztec, N. Mex., $34,375.

O. A. Dorst, Columbine, Wyo., $36,085.

J. H. Russell, Salt Creek, Wyo., 36,400.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 48)

Mills Bennett Production Co.'s No. 1 Gulf-Smith (workover), W. D. Smith Sur., 50 ft. from S line and 50 ft. from E line tract ..... Coring sand showing oil 5,627 ft.
Rio Bravo Oil Co.'s No. 2 Fisher, west flank..... Drlg. rock 4,735 ft.
Sinclair Oil & Gas Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. out of S cor. of tract ..... Drlg. sandy lime rock 3,569 ft.
Sun Oil Co.'s No. 2 Smith, W. D. Smith Sur., 75 ft. from W line, 50 ft. from N line of tract ..... Drlg. rock 3,532 ft.
Sun Oil Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. from S line, east offset Yount Lee Oil Co.'s No. 3 Winfree ..... Rig.
Sun Oil Co.'s No. 2 Winfree, W. D. Smith Sur., 450 ft. SE along SW line from NW cor. of tract and 50 ft. NE at right angles ..... Drlg. rock 3,383 ft.
Sun Oil Co.'s No. 14 Wilburn fee, east ..... Junked hole 4,162 ft.; skidded derrick 36 ft. east.

The Texas Company's No. 2 Winfree, west flank, W. D. Smith Sur., 264 ft. N, 50 ft. W at right angles out of SE cor. of lease ..... Drlg. shale and lime 4,916 ft.
The Texas Company's No. 3 Winfree, west flank, W. D. Smith Sur., 478 ft. N and 50 ft. W at right angles.... Drlg. sticky shale 5,360 ft.
The Texas Company's No. 5 Wilburn, east flank, Wm. Hodges Sur., 400 ft. SW of No. 4 Wilburn and 50 ft. from SE line of lease ..... Abandoned in cavity 1,323 ft.
The Texas Company's No. 4 Wilburn (D.D.), Henry Griffith League, approximately 1,700 ft. from W line and 50 ft. from S line of tract ..... Cmtd. bottom of hole 5,292 ft.
Yount Lee Oil Co.'s No. 9 Chambers (D.D.), Wm. Bloodgood Sur., 550 ft. from N line and 1,660 ft. from W line of tract ..... Rig up to deepen 4,841 ft.
Yount Lee Oil Co.'s No. 15 Chambers (D.D.), Wm. Bloodgood Sur., 50 ft. from E line and 355 ft. from N line tract ..... Set 85 ft. screen 4,709 ft.; comp. pumping 140 bbls. fluid, 30% water.

Yount Lee Oil Co.'s No. 19 Chambers, south flank, Wm. Bloodgood Sur., 10 ft. N Sun Oil Co.'s No. 8.... Set 5 jts. screen 3,794 ft.; comp. flowing 600 bbls. fluid, 15% water.

Yount Lee Oil Co.'s No. 3 Winfree, W. D. Smith Sur., 100 ft. out of NE cor. of tract ..... Drlg. sand and gravel 772 ft.

RACCOON BEND—AUSTIN COUNTY

Humble & Valley's No. 1 Martha Remmert ..... Location.

HUMBLE—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 2 H.E.&W.T., Adams Sur., 250 ft. N along railroad tract from No. 1 and 25 ft. W from center of said tract ..... Gumbo 1,019 ft.; cmtd. surface csg.

Rio Bravo Oil Co.'s No. 1 Westheimer, John Brown Jones One-Third League, 800 ft. from E line and 100 ft. from S line of Blk. 1, in Lot 48, Westheimer Subd. ..... Location.
Sun Oil Co.'s No. 16 Bender, Adams Sur., Bender South Addition, 110 ft. N of N line of H.E.&W.T. 150-ft. right of way and 75 ft. E of center line of right of way ..... Drlg. shale and lime 1,918 ft.
Sun Oil Co.'s No. 22 Bender, Adams Sur., 200 ft. NE at right angles from midway point on line between Nos. 3 and 20 ..... Drlg. rock 4,233 ft.
Sun Oil Co.'s No. 23 Bender, Adams Sur., 300 ft. NW of No. 21 in line with Nos. 21 and 15 ..... Drlg. rock 4,718 ft.
Sun Oil Co.'s No. 24 Bender, W. B. Adams Sur., 24 ft. N of Rio Bravo's No. 2 H.E.&W.T. on Sun's east line ..... Location.
Sun Oil Co.'s No. 1 O'Connor, Adams Sur., 75 ft. from S line and 75 ft. from E line of 1-acre tract by S.P. depot ..... Drlg. gumbo 409 ft.
Trapshooter Oil Co.'s No. 2 Rosenbaum ..... Standing 4,067 ft.

PIERCE JUNCTION—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 14-A Settegast (workover)..... Total depth 5,008 ft.; sidetracked 2,610 ft. and drlg. sand and shale 4,290 ft.

Rio Bravo Oil Co.'s No. 21-A Settegast, J. Kopman Sur., 400 ft. S and 200 ft. N of NE cor. "A" lease.... Drlg. gumbo 2,235 ft.
Smith et al's No. 1 Bender fee, B.B.B.&C. Sur. No. 1,028, 173 ft. from E line and 14 ft. from N line of Lot 40, Jones Subd. ..... Sand showing oil 4,467 ft.; cmtd. 6⅝-in. csg. 4,159 ft.; drilled plug and set 1 jt. 4½-in. screen 4,469 ft.; standing.

BIG CREEK—FORT BEND COUNTY

Gulf Prod. Co.'s No. 52 Davis, M. Young Sur. (workover).. Tested salt water 4,233 ft.; sidetracked 3,735 ft.; set 16 ft. 4½-in. screen 3,715 ft.; tested salt water; pulling screen.

NASH—BRAZORIA COUNTY

Rycade & Abercrombie's No. 5 Wisdom (D.D.) ..... No report.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 13 Mayes, B.B.B.&C. Sur. No. 4, 75 ft. W and 700 ft. S of NE cor. of survey..... Drlg. sand 3,130 ft.

BOLING—WHARTON COUNTY

The Texas Company's No. 12 Taylor (workover), S. F. Austin Sur., 50 ft. SW of center of NE line..... Total depth 4,031 ft.; pulling screen to deepen.

SPINDLETOP—JEFFERSON COUNTY

Gulf Production Co.'s No. 7 Mann (D.D.), John Douthit Sur. ..... Sand showing oil 3,768-83 ft.; set 1 jt. 4½-in. screen.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 20 Cade ..... Rig standing.
Yount Lee Oil Co.'s No. 21 Cade, Fitzsimmons Sur., 150 ft. W of No. 17 ..... Drlg. shale and boulders 1,825 ft.

NORTH DAYTON—LIBERTY COUNTY

M. L. Gray's No. 1 Schindler, H.E.&W.T. Sur. No. 120, 100 ft. E and 250 ft. N of SW cor. of sur..... Drlg. shale and lime 853 ft.
Victor Oil Co.'s No. 1 Gulf fee, H.&T.C. Sur., 400 ft. from N line and 74 ft. from E line of tract..... Total depth 5,134 ft.; plugged to 3,441 ft.; milled out and sidetracked to sand 4,040-72 ft.; comp. flowing 1,500 bbls. pipe line oil, 350 lbs. pressure, on ¾-in. choke; now sanded.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 29 Moore, John Frazier Sur., 600 ft. N of 26 in line with Nos. 23 and 26..... Drlg. shale and lime 1,680 ft.

DAMON MOUND—BRAZORIA COUNTY

D. C. Wellock's No. 1 Hamon, John P. Mills Sur., 1,115 ft. NE line and 60 ft. W line Blk. 1 ..... Derrick.

CLAY CREEK—WASHINGTON COUNTY

Sun Oil Co.'s No. 5 Janner, J. F. Perry Sur., 1,200 ft. from SW line and 1,100 ft. from SE line..... Blew out 1,089 ft.; junked and abandoned.

Sun Oil Co.'s No. 3 W. F. Schlottman, J. F. Perry Sur., 300 ft. from NE line and 1,522 ft. from SE line of tract ..... Can rock 1,809 ft.; losing returns.

ALLEN—BRAZORIA COUNTY

Mills Bennett Production Co.'s No. 1 Allen (workover), J. G. McNeel Sur., 1,211 ft. from W line and 2,569 ft. from N line of survey ..... Total depth 4,999 ft.; drlg. sidetracked hole in sandy lime 4,618 ft.

Mills Bennett Prod. Co.'s No. 1 Poole, T. & W. Alley League, 1,390 ft. from E line and 100 ft. from S line (workover) ..... Heaving shale 4,902 ft.; sidetracking shale 4,326 ft.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds' No. 7 Davis, David Kokernot Sur., 100 ft. S of No. 4 ..... Sand and shale 3,816 ft.; reaming.
Cranfill-Reynolds Oil Co.'s No. 1-C Kirby fee ..... Drill stem stuck 6,154 ft.; sidetracked to 4,212 ft.; fishing drill pipe.
Cranfill-Reynolds Oil Co.'s No. 2 Moore's Bluff (workover) ..... Total depth 3,629 ft.; drlg. sidetracked hole in sand and lime 3,078 ft.

BLUE RIDGE—FORT BEND COUNTY

Doney & Means' No. 1 Blakely, E. Drew Sur., 420 ft. W and 75 ft. N of SE cor., Lot 8, Blk. D ..... Sandy shale showing oil 3,730 ft.; cmtd. 6⅝-in. csg. 3,630 ft.; drilled plug and comp. flowing 900 bbls. daily.
Telschow, Cady et al's No. 5 Blakely, E. Drew Sur., 90 ft. E, 150 ft. S of NW cor. of E half, Lot 4, Blk. F... No report.

HANKAMER—LIBERTY COUNTY

Gulf Production Co.'s No. 13 Boyt, H.&T.C. Sur. No. 22, 500 ft. N of No. 1 in line with Nos. 6 and 11..... Drlg. hard shale and lime 3,576 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 101-A Cotton ..... Rig.
Rio Bravo Oil Co.'s No. 114-A Cotton ..... Total depth 507 ft.; comp. pumping 9 bbls. net oil.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Humble Oil & Ref. Co.'s No. 2 Sergeant, east flank..... Standing 5,931 ft.
Texas Gulf Sulphur Co.'s No. 1 R. H. Munger, J. McFaddin Sur., 100 ft. from N line and 100 ft. from E line 27-acre tract ..... Abandoned sulphur test 1,003 ft.
Texas Gulf Sulphur Co.'s No. 4 Carter, B. M. Spinks Sur., 100 ft. from N line and 100 ft. from E line of 60-acre tract ..... Sulphur test.
Texas Gulf Sulphur Co.'s No. 1 Cowan, B. M. Spinks Sur., 200 ft. N and 1,150 ft. W of SE cor., 154-acre tract ..... Abandoned sulphur test 1,363 ft.
Texas Gulf Sulphur Co.'s No. 1 A. Z. Gardner, B. M. Spinks Sur., 100 ft. W and 100 ft. S of NE cor. 60-acre tract ..... Sulphur test.
Texas Gulf Sulphur Co.'s No. 1 V. R. McManus, B. M. Spinks Sur., 200 ft. S and 100 ft. W of NE cor. 125-acre tract ..... Sulphur test.
Texas Gulf Sulphur Co.'s No. 2 V. R. McManus, B. M. Spinks Sur., 1,500 ft. W and 100 ft. S NE cor. 125-acre tract ..... Sulphur test.
Texas Gulf Sulphur Co.'s No. 3 V. R. McManus, B. M. Spinks Sur., 100 ft. S and 100 ft. E NW cor. 125-acre tract ..... Sulphur test.
Texas Gulf Sulphur Co.'s No. 1 D. J. Harrison, B. M. Spinks Sur., 1,694 ft. N and 1,300 ft. E of SW cor. 485-acre tract ..... Sulphur test.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 14 Pratt-Hewitt-Rooke..... Shale 6,120 ft.; fishing.
Houston Oil Co.'s No. 5 Wilson-Heard (workover)..... Reset screen 3,686 ft.; put on gas lift and blowing small amount of fluid, 90% water; abd.

Houston Oil Co.'s No. 10 Wilson Heard, Refugio town tract, 150 ft. from N line and 150 ft. from E line of S 50-acre tract ..... Derrick.
Houston Oil Co.'s No. 3 Rose Lambert..... Sand showing oil 6,472-6,501 ft.; to test.

Houston Oil Co.'s No. 5 Mrs. M. H. Ryals, Refugio Town Tract, 150 ft. from N line of tract and 527 ft. east of No. 1 ..... Spudded.
Houston Oil Co.'s No. 6 Pratt-Hewitt-Rooke (D.D.), Thos. Mullen Sur., 1,150 ft. N and 200 ft. W of SE cor. of tract ..... Pulling screen to deepen 3,708 ft.
Larco Oil & Gas Co.'s No. 1 Strauch, C Lot 13, Blk. 2 ... Former gas well 3,700 ft.; sidetracked hole 1,942 ft.; drlg. shale 2,800 ft.

Mission Drilling Co.'s No. 2 Moss-Powers, C, Blk. 109, townsite ..... Drlg. gumbo and lime 5,375 ft.
Mission Drilling Co.'s No. 2 J. J. O'Brien, Refugio town tract, 150 ft. from E line and 150 ft. from S line 12½-acre tract ..... Rig.
Moody-Seagraves Prod. Co.'s No. 6 Morgan-O'Connor..... Total depth 6,470 ft.; plugged to 6,431 ft.; tested salt water; milling out 6,353 ft. to sidetrack.

Moody-Seagraves Prod. Co.'s No. 8 O'Connor, Refugio Town Tract, 350 ft. east of No. 1 and 150 ft. from S line of lease ..... Drlg. broken lime 4,081 ft.
Moody-Seagraves Prod. Co.'s No. 2-A J. F. B. Heard..... Rig standing.
Moody-Seagraves Prod. Co.'s No. 1 Shelly..... Total depth 6,467 ft.; plugged to sand 6,450-54 ft.; fishing packer.

Pearson Properties' No. 5 Ryals, 174 ft. from S line of lease and 475 ft. E of No. 3 ..... Derrick.
Ed Price's No. 3 Mission River, Refugio Town Tract, 750 ft. up river from No. 2 on S bank of river..... Shut down 350 ft.
Saxet Oil Co.'s No. 3 Cable (D.D.), C, Blk. 19, Town Commons ..... Set 1 jt. screen 3,700 ft.; comp. pumping 100 bbls.

United Prod. Corp.'s No. 1-A Fox, L. Brown Sur., 750 ft. W along S line from SE cor. of lease and 1,000 ft. N of said line ..... Coring sand 5,614 ft.
United Prod. Corp.'s No. 3 Fox (workover)..... Total depth 6,484 ft.; pulling 5 3/16-in. csg. to sidetrack 3,715 ft.

United Production Corp.'s No. 6 O'Brien, 150 ft. from S line of tract, 350 ft. W No. 3 ..... Rig.
United Prod. Corp.'s No. 9 O'Brien, 150 ft. S of S line and 175 ft. E of extended W line of Moody-Seagraves' O'Brien "B" lease ..... Coring shale 6,373 ft.
United Prod. Corp.'s No. 6 Power, S Blk. 83, Refugio Townsite ..... Coring shale 6,341 ft.
United Prod. Corp.'s (Union) No. 2-A Rose Lambert, 175 ft. W and 200 ft. N of SE cor., Blk. 1, of town tract ..... Coring shale 6,484 ft.
United Production Co.'s No. 3 Mitchell, 150 ft. from N line and 609 ft. from W line of tract ..... Total depth 6,458 ft.; plugged to 6,445 ft.; set screen.

United Production Corp.'s No. 6 A. W. J. Heard, Refugio town tract, 1,253.6 ft. from W line and 257 ft. from S line of tract ..... Sand showing oil 3,662-72 ft.; cmtd. 9-in. (O.D.) csg. 3,662 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co.'s No. 31 Miller (D.D.), 360 ft. from N line and 900 ft. from W line of SW NE, Sec. 8-10s-9w ..... Coring sand 4,928 ft.
Vacuum Oil Co.'s No. 7 State, 319 ft. N and 260 ft. W SE cor. NE, Sec. 8-10s-9w ..... Hard sand 6,567 ft.; cmtd. 9⅝-in. csg. 6,516 ft.
Yount Lee Oil Co.'s No. 2 Miller, 125 ft. N and 120 ft. W, SE cor. NE NW, Sec. 8-10s-9w ..... Drlg. shale 3,930 ft.

EDGERLY—CALCASIEU PARISH

Rex Pet. Co.'s No. 2 Prairie Narroni, Sec. 21-9s-11w, 365 ft. from S line and 50 ft. from E line of lease..... Sand showing oil 4,087 ft.; cmtd. 5-in. csg. 4,050 ft.; drilled plug and set 35 ft. 4½-in. screen; tested salt water; pulling screen to deepen.

Strange Oil Co.'s No. 1 Reed (D.D.), Sec. 28-9s-11w, 60 ft. W and 100 ft. S of NE cor., Lot 3, Koonce Subd. ..... Deepened from 3,679 to 3,687 ft.; set 35 ft. of 3-in. screen; pumped dry; temporarily abnd.

HACKBERRY—CAMERON PARISH

Federal Petroleum Co.'s No. 2 Herbert, 660 ft. S and 660 ft. W of NE cor. NW NW, Sec. 33-12s-10w.....Drlg. shale 5,590 ft.
R. E. Seiss' No. 2 J. M. Vincent.....Drlg. shale and lime 2,022 ft.
The Texas Company's No. 8 State.....Derrick.
Yount Lee Oil Co.'s No. 34 State.....Location.
Yount Lee Oil Co.'s No. 36 State.....Location.
Yount Lee Oil Co.'s No. 37 State.....Location.
Yount Lee Oil Co.'s No. 38 State.....Location.
Yount Lee Oil Co.'s No. 39 State.....Location.

VINTON—CALCASIEU PARISH

Vinton Pet. Co.'s No. 11 Matilda Gray (20 acres), 605 ft. from S line and 195 ft. from E line of tract in Sec. 33-10s-12w.....Drlg. hard sand 3,160 ft.
Vinton Pet. Co.'s (Lucky Ten) No. 1 Lizzo.....Tested salt water 3,285 ft.; pulling liner and screen.

BAYOU BOUILLON—ST. MARTIN PARISH

Humble Oil & Ref. Co.'s No. 4 State.....Drlg. sticky shale 5,152 ft.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 2 Sweet Lake, Sec. 5-13s-7w.....No report.
Pure Oil Co.'s No. 10 Yount Lee.....Sand showing oil 7,366-87 ft.; waiting 5¾-in. csg.

PORT BARRE—ST. LANDRY PARISH

The Texas Company's No. 9 Botney Bay.....Set 2 jts. 4½-in. screen 3,999 ft.; comp. on air lift flowing 350 bbls. daily.

STARKS—CALCASIEU PARISH

Gulf Refining Co.'s No. 27 Lutcher-Moore, Sec. 19-9s-12w. Drlg. sand and shale 1,015 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 762 fee (workover).....Salt 5,864-9,250 ft.; abandoned.
Union Sulphur Co.'s No. 765 fee, Sec. 29-9s-10w.....Drlg. shale 4,300 ft.
Union Sulphur Co.'s No. 766 fee, Sec. 29-9s-10w.....Oil sand 4,964-67 ft.; cmtd. 6⅝-in. csg. 4,954 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Empire Gas & Fuel Co.'s No. 1 Kuntze, San Felipe.....Drlg. shale 6,806 ft.
O'Hara et al's No. 1 Schrader.....Drlg. sticky shale 3,768 ft.
Parmerson & Cafferkey et al's No. 1 W. M. Schlecte, John Fitzgibbons Sur., 1,850 ft. from SE line and 3,100 ft. from NE line of survey.....Drlg. lime rock 965 ft.

BRAZORIA COUNTY

Faust et al's No. 5 Faust, Blk. B, Sec. 3, H.T.&W. Sur...Shut down 6,504 ft.
Freeport Sulphur Co.'s No. 2,001 fee, Bryan Heights.....Heaving shale 5,260 ft.; S. D.
Amerada Pet. Corp.'s (Rycade) No. 2 Seaburn, Stratton Ridge.....Heaving shale 7,624 ft.
The Texas Company's No. 1 Belcher, Manvel, 167 ft. SE of NW line and 223 ft. NE of SW line, Lot 18, Blk. A, Suburban Gardens Subd.....Derrick.
United Oil Syndicate's No. 1 Speer, A. A. Talmadge Sur...Sand 1,866 ft.; set screen.

BURLESON COUNTY

Mid-South Oil Co.'s No. 1 Duckworth.....Shut down 2,646 ft.
Reynolds Oil Co.'s No. 1 Harris, 500 ft. from W line and 400 ft. from N line of J. M. McKean Sur.....Shut down 400 ft.

CALHOUN COUNTY

The Texas Company's No. 1 Smith, J. Timmins Sur., Will Mousin and Driscoll Subd.....Drlg. sand and shale 4,766 ft.

COLORADO COUNTY

United North & South Oil Co.'s No. 1 H. P. Lockwood, 3,100 ft. S line and 2,000 ft. W line J. R. Johnson Sur.....Drlg. gumbo 785 ft.

FORT BEND COUNTY

H. R. Cullen's No. 1 Lockwood, John Rabb Sur., 475 varas from W line of E half of survey and 1,245 ft. from N line.....Drlg. gumbo 1,086 ft.

HARRIS COUNTY

Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 261, Wm. Lovett Sur.....Location.
Humble Oil & Ref. Co.'s No. 6 Minnetex, Mykawa, Wm. Lovett Sur., C of Lot 254.....Drlg. hard sand 2,759 ft.

JACKSON COUNTY

Chicago-Gulf Co.'s No. 1 Rogers (workover).....T. D. 3,662 ft.; drlg. sidetracked hole 3,000 ft.

JEFFERSON COUNTY

Humble Oil & Ref. Co.'s No. 1 McFaddin, T.&N.O. Sur. 234.....Drlg. shale 7,347 ft.
Keith et al's No. 1 Reed-Hankamer.....Abandoned in shale 5,029 ft.
The Texas Company's No. 4 Pipkin, Big Hill.....Drlg. shale 5,903 ft.

LIBERTY COUNTY

Hamm et al's No. 1 Harvard, Davis Hill.....Gumbo 1,015 ft.; shut down.
Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4.....Gumbo 560 ft.; shut down.

MATAGORDA COUNTY

H. C. Cockburn's No. 2 Hawkins, Shepherd's Mott.....Standing 5,221 ft.
Empire Gas & Fuel Co.'s No. 1 Boker, Citrus Grove.....Total depth 6,295 ft.; sidetracking in sand 5,880 ft.

MONTGOMERY COUNTY

Lake Creek Oil Co.'s No. 1 Hunt, south of Conroe.....Shut down 678 ft.; gumbo.
Price & Wilhite's No. 2 Juerges.....Drlg. shale 3,809 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract.....Formerly temporarily abnd. 4,603 ft.; sidetracked hole 1,200 ft.; drilled to 1,820 ft.; shut down.
Crew Oil Co.'s No. 1 Mansfield.....Shut down 1,460 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman.....Drlg. shale 2,867 ft.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Damsan, 150 ft. from N line and 150 ft. from W line of Blk. 16, Bonnie View Ranch Subd.....Shut down in gumbo 4,014 ft.
Humble Oil & Ref. Co.'s No. 1 O'Connor, John Keating Sur.....Location.

SAN JACINTO COUNTY

E. P. Edward et al's No. 1 Bennett, northwest of Cold Springs.....Spudded and shut down.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell.....Sand and shale showing oil 1,256 ft.; cmtd. 6-in. csg. 1,218 ft.
Allied Pet. Co.'s (Texas Southern Pet. Co.'s) No. 3 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line.....Shut down 4,875 ft.
Lew Wentz' No. 1 Long Bell, 300 varas E and 100 varas N from SW cor. James Seals Sur.....Drlg. shale 3,701 ft.

VICTORIA COUNTY

Newton et al's No. 1 West.....Shut down 1,550 ft.
Simpson-Fell and Westheimer et al's No. 1 Levi, 2,200 ft. from SW line and 2,000 ft. from NW line of S.A.&M.G. Sur. No. 4.....Cmtd. 12½-in. surface csg. 1,162 ft.
T. B. Slick estate's No. 1 McFaddin, J. Vairan Sur., 17,700 ft. NE along SE line from S cor. of survey and thence 5,050 ft. NW at right angles.....Cmtd. 12½-in. surface csg. 1,130 ft.
United Prod. Corp.'s No. 4-A McFaddin, M. Travieso Sur., 1,320 ft. W along N line of C. L. Mann Sur. from NE cor. and 1,980 ft. N at right angles.....Rig.

WASHINGTON COUNTY

Joe Baker et al's No. 1 Kramer, Brenham, 600 ft. S and 300 ft. W NE cor. 92 acres.....Drlg. rock 160 ft.
Penn-Tex Oil Co.'s No. 2 Kamas Brenham, S. M. Williams Sur.....Drlg. sandy shale 2,866 ft.
Vegua Oil Co.'s No. 1 P. Graves, S. Clampet Sur.....Drlg. gumbo 855 ft.
H. H. Givens' No. 3 Hudgins, I. B. Phillips Sur., 19 ft. W of No. 2.....Gumbo and lime 1,138 ft.; reaming to bottom.

WHARTON COUNTY

Poole & Chappell's No. 1 Poole, A. J. Fry Sur., Sec. 16, 8 ft. at right angles from center of SW line of sec....Rig.

SOUTH LOUISIANA

BEAUREGARD PARISH

Beauregard Gas & Oil Co.'s No. 1 J. E. Cochran, 400 ft. S and 700 ft. W from NE cor., Sec. 34-4s-12w.....Drlg. gumbo 1,050 ft.

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w.....Shut down 875 ft.
J. O. Davis' No. 1 Industrial, Sec. 29-9s-10w.....Set 6⅝-in. csg. with 172 ft. 6⅝-in. screen on bottom 6,568 ft.; drilled plug and bailed dry; standing.
Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w.....Shut down 3,258 ft.
Dr. Thomas et al's No. 1 John Hewitt.....Location.
Vacuum Oil Co.'s No. 1 Wait (D.D.), 225 ft. out of SE cor., Sec. 12-9s-7w.....Drlg. shale 5,195 ft.

CAMERON PARISH

Vacuum Oil Co.'s No. 2 Cameron Meadows, 3,120 ft. S and 1,900 ft. W from NE cor., Sec. 21-14s-9w (500 ft. S No. 1).....Drlg. shale and lime 3,556 ft.
The Texas Company's No. 7 State, Calcasieu Lake.....Location.

IBERIA PARISH

Jefferson Lake Oil Co.'s No. 11 Lake Peigneur, Jefferson Island.....Set perforated pipe for sulphur test, anhydrite 869 ft.

IBERVILLE PARISH

Standard Oil Co.'s No. 1 Gay, Bayou Choctou.....T. D. 4,180 ft.; sidetracking 4,110 ft.
Standard Oil Co.'s No. 7 Wilbert, Bayou Blue.....Derrick.
Standard Oil Co.'s No. 6 Schwing, Bayou Blue, Sec. 73-9s-11e, 317 ft. S of No. 2.....Capping piling.
Standard Oil Co.'s No. 9 Wilbert, Bayou Des Glaise, 700 ft. E and 760 ft. N of SW cor. SE SW, Sec. 78-8s-8e..Drlg. 2,800 ft.
Standard Oil Co.'s No. 1 Baist Cooperage, Bayou Blue....Cap rock showing oil and sulphur 3,693-3,785 ft.; set csg.; T. D. 3,789 ft. in anhydrite.

JEFFERSON DAVIS PARISH

A. V. Peters' No. 1 Smith Subd., Welsh, 1,050 ft. N and 180 ft. E SW cor., Sec. 22-9s-5w.....No report.

LA FOURCHE PARISH

The Texas Company's No. 2 L.L.&E. Co. (D.D.), 4,396 ft. S and 705 ft. E of the NW cor., Sec. 26-21s-22e...Oil sand 3,598-3,628 ft.; cmtd. 4¾-in. csg. 3,595 ft.; drilled plug and set 20¾ ft. 3-in. (O. D.) screen and 2½-in. tubing; comp. flowing 62 bbls. hourly, 390 lbs. pressure, on ½-in. choke.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 2 Cockrell-Moran, Lake Grand Ecaille, Sec. 14-20s-26e.....T. D. 5,361 ft.; sidetracking in hard sand and pyrites 4,905 ft.
Humble Oil & Ref. Co.'s No. 4 Cockrell-Moran, Sec. 14-20s-26e, 1,905 ft. S and 2,860 ft. E of station.....Location.

TERREBONNE PARISH

The Texas Company's No. 6 State, Calliou Island.....Drlg. sandy lime 4,302 ft.
The Texas Company's No. 1 La.L.&E., Bay St. Elaine..Hard sand and lime 4,751 ft.; drill stem stuck.
The Texas Company's No. 4 State, Dog Lake.....Drlg. rock 1,596 ft.
The Texas Company's No. 5 State, Four Isle.....Drlg. broken lime and gyp 623 ft.
The Texas Company's No. 3 La.L.&E., Bay Junop.....Location.
The Texas Company's No. 4 La.L.&E., Bay Junop.....Location.
The Texas Company's No. 6 State, Lake Barre.....Sand 935 ft.; cmtd. 12½-in. csg.
The Texas Company's No. 10 State, Lake Barre.....Location.
The Texas Company's No. 11 State, Lake Barre.....Location.
The Texas Company's No. 12 State, Lake Barre.....Location.
The Texas Company's No. 13 State, Lake Barre.....Capping piling.
The Texas Company's No. 14 State, Lake Barre.....Location.

VERMILLION PARISH

Pure Oil Co.'s No. 1 Alliance Land, Sec. 34-11s-1w, 2,600 ft. N and 300 ft. E of SW cor. section.....Spudded.

VERNON PARISH

Smith & Wier's No. 1 Delta, NE, Sec. 14-2n-11w.....Abandoned in shale and lime 4,450 ft.

WEST FELICIANA PARISH

Putnam Syndicate's No. 2 Como Plantation, Sec. 51-1s-4w. Drlg. shale 1,081 ft.

WILDCAT OPERATIONS IN MISSISSIPPI

CLARK COUNTY

Company, farm and location—	Remarks:
Gulf Ref. Co.'s No. 1 Box, 526 ft. W, 498 ft. N, C, SE, Sec. 11-2n-15e	Drlg. 4,225 ft.

CLAY COUNTY
(Cable tools)

Ohio Oil Co.'s No. 1 Cantrell, NE cor., Sec. 16-15-5.....Straightening hole 3,526 ft.

GRENADA COUNTY

Carter Oil Co. et al's No. 2 Dubard, NW cor., Sec. 18-22n-4e.....S.D. 800 ft.

HINDS COUNTY

Attkisson & Dyer's No. 1 Downing et al, SE NE, Sec. 27-4-1.....S.D. 1,455 ft.
Cane River O. & G. Co.'s No. 1 Kabbles, NE cor. SW SW, Sec. 15-5-1e.....S.D. 3,297 ft.
Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 9-5-1e.....S.D. 74 ft.
Industrial G. & E. Co.'s No. 1 Ill. Central R.R., 2,400 ft. E, 100 ft. S, C, Sec. 4-5n-1e.....Drlg. 1,320 ft.
Southern Pet. Co.'s No. 1 Wilson (was Tri-State O. & G. Co.'s), 320 ft. E, 240 ft. N, SW cor. SE NE, Sec. 25-6-1e.....S.D. 20 ft; W.O.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keys, C NW NE, Sec. 2-12-9.....Reaming 1,388 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bouriand, Sec. 2-13-19.....S.D. 3,015 ft.
Park Bowser et al's No. 1 Cowart, second hole, Sec. 2-12-19.....S.D. 1,987 ft.

RANKIN COUNTY

Attkisson & Dyer's No. 1 Valentour, 200 ft. S, 200 ft. E, NW cor., Sec. 18-5n-3e.....Derrick.
Grandstaff et al's No. 1 Carr, 2,780 ft. W, 550 ft. N, SE cor., Sec. 12-5n-1e.....S.D. 550 ft.
Harding & Flint's No. 1 Webb, center Lot 32, Blk. B, East Jackson Place, Jackson City Sbd., Sec. 12-5-1..Location.
R. A. Moore et al's No. 1 Interior Lbr. Co., Sec. 28-6-1e..S.D. 900 ft.
Cleve Love's No. 1 Muse, SE cor. SW SW, Sec. 32-7-4e..Drlg. 3,290 ft.
Love Pet. Co.'s No. 1 Interior Lbr. Co., Sec. 28-5n-2e....S.D. 867 ft.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owen, Sec. 2-5-9.....Derrick.

WARREN COUNTY

Dixie Pet. Co.'s No. 1 Henry, 1,375 ft. W, 380 ft. N, SE cor. NE, Sec. 26-17-4, of Choctaw Div. on Lot 2..Drlg. 1,327 ft.
Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-3.....Rigging up.
Vicksburg O. & G. Co.'s No. 1 Dornbush, Sec. 8-18-5....Abd. 1,320 ft.

WINSTON COUNTY

Miss. Drlg. Co.'s No. 1 Scarbrough, NW cor., Sec. 15-13-14.....S.D. 2,797 ft.

YALOBUSHA COUNTY

Collett-Carter Oil Co.'s No. 2 Blackmur, 990 ft. W, 285 ft. N, C, Sec. 14-11-4.....Recemented 8⅝-in. 2,428 ft; T.D. 2,960 ft.

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Brief Items for Petroleum Refiners

T. H. Barton Head of Louisiana-Arkansas Refinery Activities

Col. T. H. Barton, of the Lion Oil & Refining Co., El Dorado, Ark., was elected president of the Louisiana-Arkansas

Col. T. H. Barton

Refiners Association at the annual meeting held last week in Shreveport, La. Colonel Barton for several years has been president and general manager of the Lion company and is well known in Mid-Continent refinery circles.

D. P. Hamilton, president of the Root Refining Co., Shreveport, La., was elected first vice president, and C. M. Lamason, of the Louisiana Oil Refining Corp., second vice president. Joseph F. Atkins, Spartan Refining Co., Shreveport, was elected treasurer and L. C. Grosjean, Shreveport, secretary. Mr. Grosjean devotes his entire time to activities of the association and is in charge of the Shreveport office.

The new board of directors include B. P. Crittenden, Louisiana Oil Refining Corp., Shreveport, La.; T. H. Barton,

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PLANT NEAR ARTESIA, N. M., NOW OPERATING

Pecos Diamond Refining Co. of Artesia, N. Mex., has recently completed and put in operation its new plant in the Artesia Field, 10 miles south of the city. The plant is running at present 300 bbls. of 38 gravity Artesia crude daily.

The refinery consists of a pipe still and bubble tower unit, auxiliary equipment and a treating plant. The plant was designed and constructed by Tilden E. Guillory, petroleum engineer of Houston, Tex. It was built to run specification U. S. Motor gasoline, special tractor distillates, gas oil and fuel oil. The gasoline is being distributed locally throughout the Artesia trade territory through tank wagon sales.

One feature of the plant is that it was built in such a way that only one man per shift is needed to operate the plant. The entire system is as nearly automatically controlled as was possible to construct it.

The Pecos Diamond Refining Co. is composed of George A. Grober and associates, formerly of California. Mr. Grober is president and Mrs. Grober is vice president.

FRENCH REFINERIES TO FURNISH OUTLET FOR AMERICAN CRUDE OIL

NEW YORK, May 2.—Heavy purchases of American crude petroleum by French refiners are looked for during the latter part of the year, and during 1932, as the result of the granting of crude oil import permits to a number of French refining companies recently. The permits already granted are good for 20 years, and date from October 31, next.

One French group is reported to have contracted for 2,000,000 bbls. of East Texas crude, deliveries to start January 1, 1932, and several other similar contracts for American crude are now reported under negotiation. The permits issued by the French government do not specify the quantities of crude which may be imported, but limit imports to "crude, derivatives or residuals" necessary to yield specified quantities of gasoline, kerosene, lubricating oil and gas oil. The crude which the government will permit to be imported into France is up to the quantity necessary to insure the availability for domestic consumption of a total of 2,832,250 metric tons of the products specified, and pending further notice, importation of petroleum products other than these four (including fuel oil) will be permitted without restriction.

Licensed Companies

The permits issued by the French government are of general interest to American crude oil producers who may be interested in developing export outlets for their products. The companies already licensed, with details of their refining capacity, outlets, etc., are as follows:

1. Societe Franco-Americaine de Raffinage (with which American companies are interested). This company operates a refinery at Port-Jerome, which is allotted production of 356,000 tons of gasoline, 38,000 tons of kerosene, 139,000 tons of lubricating oil and 45,400 tons of gas oil, which may be produced for the company's own account, or for the account of any or all of the following companies: Bedford, Economique, Cie. Gle. des Petroles, Andre Fils, and La Mailleraye.

2. Compaigne Francaise de Raffinage. This company operates refineries at Gonfreville and Martigues, and is allotted production of 419,000 tons of gasoline, 61,000 tons of kerosene, 40,000 tons of lubricating oil and 42,200 tons of gas oil. Companies participating in this operation are as follows: Desmarais, Lille-Bonnieres, Champenoise des Carburants, Francaise des Carb, Motoline, Consommateurs de Petr., Francaise des Combustibles, Meridonale des Petr., Appr. des Consommateurs. This permit provides further that "the present authority is issued independently of any agreements which the Compaigne Francaise des Petroles or the Compagnie Francaise de Raffinage has concluded, or may conclude, with the state, the application of which will be the subject of special dispositions or regulations." This company is the government-controlled oil company, and is expected to operate largely on crude from Iraq when production in that country is further expanded and the pipe line to the Mediterranean built.

3. S. A. des Petroles Jupiter. This company, affiliated with the Royal Dutch group, has refineries at Petit-Couronne and Pauillac, and is allotted production of 263,000 tons of gasoline, 37,000 tons

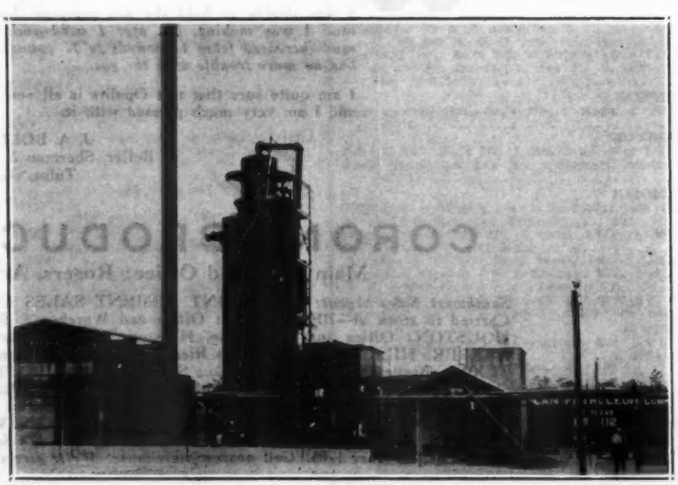
(Continued on Page 128)

NEW REFINERY AT HOUSTON HAS 4,000-BARREL DAILY CAPACITY

The American Petroleum Co. of Texas is now operating on a settled basis its new refinery located at Norsworthy on the Houston Ship Channel. Plant construction started early in the year.

The plant has a capacity of 4,000 bbls. of crude oil daily making gasoline, gas oil and fuel oil. The distillation equipment consists of one large pipe still, vaporizer, bubble tower and an additional rerun tower for use in making any special products which may be required together with auxiliary preheater and exchangers and condensing equipment. A complete treating unit has also been installed.

The American company is a newly organized company with offices in Houston. W. W. Moore is president of the company, R. C. Tucker, vice president; G. L. Townsan, secretary, and C. T. Carnes, treasurer. R. C. Cooke is plant superintendent and James P. Lavery, sales-manager.



Distillation unit at American Petroleum Co. refinery.

Start Vapor Phase Process at Coutts, Alberta, Refinery

CHATHAM, Ontario, May 2.—Canada's first vapor-phase cracking refinery of the Leamon type, located at Coutts, Alberta, will start operating within the next few days. Work there has been pushed rapidly with a crew of 100 men during the past month. The plant, which was installed by the Northwest Stellarene Co., Inc., for the manufacture of Stellarene, an antiknock gasoline, is located at the site of the old Beaver refinery adjoining the Maple Leaf. Its total valuation is set at $350,000.

Stellarene will be first introduced commercially in Alberta. Sales offices of the company will be located at Lethbridge, Calgary and other strategic Canadian points with headquarters at Coutts, Alberta, and Shelby, Mont. An extensive advertising program of the new product will be launched.

Stellarene consists essentially of unsaturated hydrocarbon oils — the naphthene series with unsaturated side chains predominating. Its outstanding virtue lies in its inherent extremely high antiknock or antidetonation value.

The premium Stellarene for retail will be blended at the Northwest Stellarene refinery at Coutts in a proportion of approximately 60 per cent Stellarene and 40 per cent gasoline.

Catalytic Process

The Stellarene process is catalytic, and in its simplest expression consists of passing superheated oil vapors through a bed of solid catalyst. No pressure is required in the process except that neces-

(Continued on Page 147)

ENLARGING DUBBS UNIT

The Arro Oil & Refining Co. is enlarging its Dubbs cracking unit at its West Lewistown, Mont., refinery. A large reaction chamber is being added and improvements made in the furnace design. The unit which was built several years ago was the first cracking process installed at a Montana refinery.

The Conrad Refining Co. is enlarging its skimming plant at Conrad, Mont., so that it will handle 1,500 bbls. of crude oil daily. The present capacity is 750 bbls. daily. Crude is obtained from the Pondera Field.

SINCLAIR ENLARGING PLANT

HOUSTON, Tex., May 2.—The enlargement program at the Houston ship channel refinery of the Sinclair Refining Co. is now well under way. Some of the cracking equipment and rerun stills have been completed. Six of the company's 80,000-bbl. storage tanks have been completed.

SUMMER COURSE IN REFINING

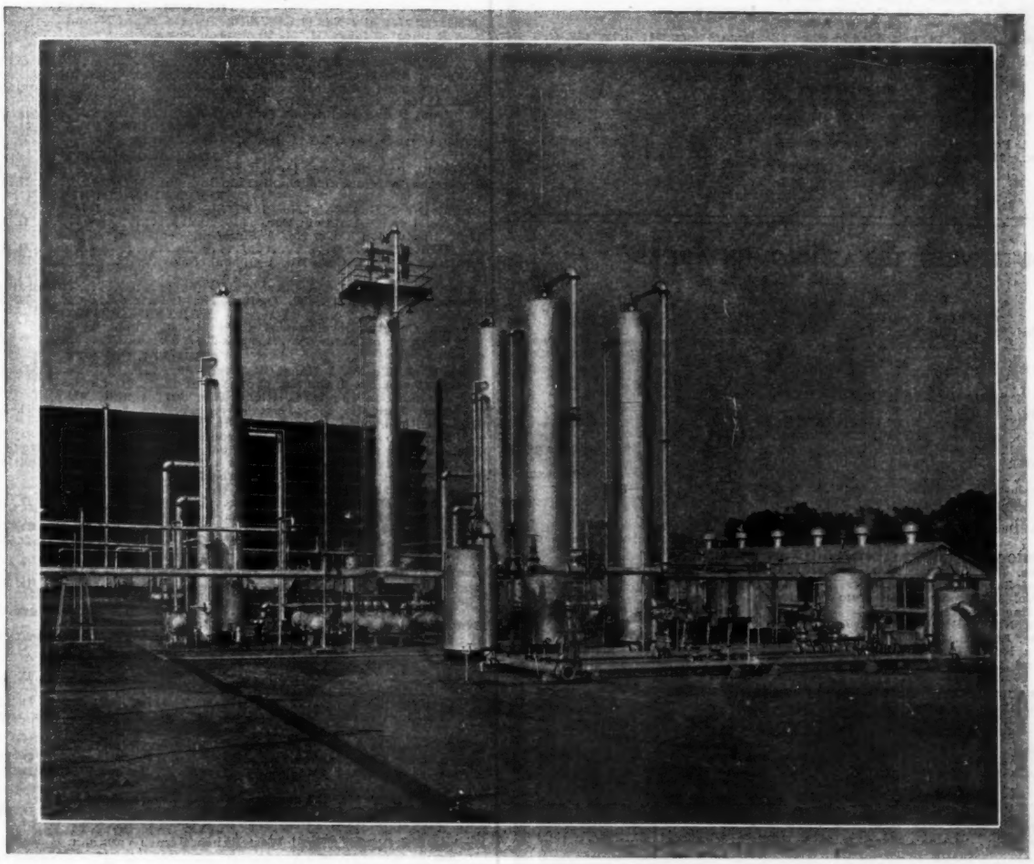
The department of chemical engineering of the Massachusetts Institute of Technology will offer a special course in refining during the coming summer. This course will extend from July 20 to August 21 and will include detailed studies in the fundamentals of liquid flow and friction and the second part will deal with heat transmission.

NEW TEXAS PLANT

The Young Refining Co. is building a 300-bbl. skimming plant at Archer City, Tex. The company will organize with W. C. Young as president, and Claude Senn will be in charge of operations as superintendent.

Braun

QUALITY ⚖ PRICE



We have demonstrated to many customers, old and new, as we did to the owners of this large gasoline absorption and stabilization plant, that BRAUN quality products and workmanship are now obtainable at a price so low that quality no longer need be sacrificed for first cost. No longer need the engineer fear that low first cost means mechanical and operating deficiencies or high maintenance expense.

C. E. BRAUN & CO., INC.

ALHAMBRA , NEW YORK , CHICAGO , TULSA , HOUSTON

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 46)

WEBSTER PARISH—SAREPTA

Cassidy & Davis' No. 1 Nickerson, 300 ft. S, 300 ft. W, NE cor. SW, Sec. 29-23-10.....S.D. 150 ft

ARKANSAS

OUACHITA COUNTY—STEPHENS

Wesson & Bonner's No. 1 Wesson, 500 ft. W, 175 ft. N, SE cor. SW NW, Sec. 22-15-19.....Trying to shut off wtr. flow.

UNION COUNTY—EL DORADO

Lion O. & R. Co.'s No. 9-A G. P. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15.....Drlg. broken lime 2,435 ft.
Rice Drlg. Co.'s No. 1 Watley, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15.....S.D. funds; T.D. 2,186 ft.
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15.....S.D. 2,608 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13.....Location.
Marine Oil Co.'s No. 4-B Thompson, Sec. 10-18-13.....Flowing by heads 235 bbls. daily.

EAST TEXAS

HARRISON COUNTY

Calatex O. & G. Co.'s No. 6 Argus, 755 ft. N, 699 ft. W, Mile Post 27, in J. Womack Sur.....Location.

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 13 Louis Werner, 1,590 ft. S, 460 ft. W, SE cor. Carrie Steele tr., B. C. Jordan Sur.....21,300,000 ft. gas 4,727 ft.
Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. ....S.D. 2,600 ft.
Dillon & Bradham's (was W. G. Banks et al's) No. 1 C. O. Baldwin, 1,995 ft. W, 1,562 ft. S, NE cor. Baldwin 240 ac. in Hampton West Sur.....S.D. 1,555 ft.
S. E. Bell et al's No. 1 Burnett Lbr. Co., C. S. B. Hendricks Sur.....S.D; W.O. 3,335 ft.
C. D. Neff et al's No. 6 Brumble, B. C. Jordan Sur. ....Derrick.
United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lease, in B. C. Jordan Sur. ..Location.
United Prod. Corp.'s No. 10 Warner, 388 ft. N, 2,467 ft. W, SW cor. Thos. Cox Sur. in Ben Jordon Sur. ....Began Apr. 28; drlg. 167 ft.
Southwestern O. & G. Co.'s No. 1 E. R. Vinson, 3005 ft. S, 1,001 ft. W, NE cor. C. T. Anderson Sur. .....Will deepen old well; set 4½-in. at 2,415 ft.

MISSISSIPPI

HINDS COUNTY

Cleve Love et al's No. 2 Ridgeway-McGhee, SE cor. NW, Sec. 2-6-1e .....Derrick.
Pirtle & Flint's No. 1 Payne, 450 ft. W, 50 ft. N, SE cor. SW SW, Sec. 27-6-1e.....S.D; W.O. 2,562 ft.

RANKIN COUNTY

Miss. G. & F. Co.'s No. 1 Hanna, SW cor. SW NE, Sec. 14-5-1e .....Derrick.

SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 52)

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities Co.'s No. 6 Chittim, Sec. 116, Blk. 7, I.&G.N. Sur. .....T. D. 5,590 ft.; tested 4,500,000 ft gas; drlg. deeper.
Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim .....T. D. 120 ft.; drlg.

AGUA DULCE FIELD—NUECES COUNTY

Houston Oil Co.'s No. 1-B Ollie Furi .....T. D. 6,010 ft.; drlg.

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1 Maggie Harrall, 330 ft. from S and W lines of Blk. 32, Sec. 311 .....T. D. 447 ft.; waiting on cement.
Houston Oil Co.'s (Andy Bowen) No. 1 Prieur, H. B. Sheppard Sur. .....T. D. 1,465 ft.; waiting for csg.
W. L. Pearson Properties' No. 1 Dunn, 300 ft. S of Bay..Shut down 2,600 ft.
L. L. Smith's No. 1 Hunter, 150 ft. from S and W lines of N half of Hunter tract .....Building derrick.
Saxet Oil Co.'s No. 8 Dunn, 1,000 ft. N, 500 ft. W of No. 7 Dunn .....T. D. 481 ft.; waiting on cement.

SCHOOLFIELD-O'BYRNE POOL—DUVAL COUNTY

Magnolia Pet. Co.'s No. 3 Wilson, 330 ft. from N, 1,720 ft. from W line of Sur. No. 134 .....Rigging up.
Magnolia Pet. Co.'s No. 3 Wilson, 330 ft. from N line, 1,720 ft. from W line, Sur. 134 .....T. D. 1,310 ft.; drlg.
The Texas Company's No. 1 Bishop Duval Land Co., 330 ft. from S line, 1,520 ft. from W line, Sur. 135.. T. D. 1,400 ft.; drlg.
The Texas Company's No. 1 Bishop Duval Land Co., 330 ft. from S and 1,520 ft. from W line of Sur. No. 135 .....Rigging up.

WHITE POINT FIELD—SAN PATRICIO COUNTY

United Production Co.'s No. 3 Cage .....T. D. 4,012 ft.; abnd. dry.
Saxet Oil Co.'s No. 4 White Point .....T. D. 4,936 ft.; trying to test.

FRYOR FIELD—ZAVALA COUNTY

Texas Gas Utilities' No. 4 Fryor, 1,000 ft. NW of No. 3 Fryor .....Location.
Texas Gas Utilities Co.'s No. 5 Fryor .....T. D. 764 ft.; set csg.; waiting on cement.

LAREDO DISTRICT

KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 50 Kohler, 2,805 ft. from S line, 165 ft. from W line of Sur. 164 .....T. D. 6,084 ft.; drlg.

COLE POOL—DUVAL COUNTY

Southern Oil Co.'s No. 2 Kings-Harper, 1,794 ft. E line, 739 ft. N line of Sur. 323 .....Location abnd.
Magnolia Pet. Co.'s No. 1 W. Benavides, 330 ft. from N and W lines, Sur. 172 .....Rigging up.

CAROLINA-TEXAS POOL—WEBB COUNTY

Carolina-Texas Oil & Gas Co.'s No. 9 Barnsley Sur. No. 268 .....T. D. 2,567-75 ft.; tested gas; waiting on cement.

JENNINGS-MUCKELROY POOL—ZAPATA COUNTY

E. C. Brogan's No. 1 Montemeyor, Blk. 11, Sur. 64 .....Sand 1,494-1,500 ft.; running tester.
Nordan & Morris' No. 1 Jose Bustamente, 750 ft. NE line, 200 ft. NW line, Share 35, Comitas grant .....T. D. 1,491 ft.; comp. 200 bbls.
J. I. Newton's No. 3 Trevino, Blk. 7, Sur. No. 66 .....Rigging up.
O. W. Killam's No. 6 A. Bustamente, 150 ft. to NE and SE lines, Blk. 8, Share 5, Comitas grant .....T. D. 1,243 ft.; comp. 10 bbls.
O. W. Killam's No. 7 Bustamente, 450 ft. from SE and SW lines of Blk. 7, Share 5, Comitas grant .....Location.
Trevino Oil Corp.'s No. 8-A Trevino, 450 ft. to W, 150 ft. to N line, Blk. 26, Sur. No. 412 .....T. D. 1,224 ft.; comp. 50 bbls.

CUELLAR POOL—ZAPATA COUNTY

O. W. Killam's No. 40-C Cuellar, Sur. No. 278 .....Derrick.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 52)

BEXAR COUNTY

John F. Camp's No. 1 Chevez, 12 miles S of San Antonio .....Moving in tools.
Kaye & Uhl's No. 1 Rhode, C. Texada Sur. No. 133 .....T. D. 665 ft.; abnd.
J. M. Russell's No. 1 F. L. Price, 1,500 ft. to N line, 660 ft. W of tract in Angel Navarro Sur. .....T. D. 1,114 ft.; drlg.
Schneider, Rees et al's No. 2 Claussen, 12 miles NE of San Antonio .....T. D. 702 ft.; shut down.
Russell & Moore's No. 3 Mills, Angel Navarro Sur. No. 5 .....T. D. 940 ft.; shut down.
Ueckert et al's No. 1 Palfrey, 1,000 ft. S and W lines of farm .....T. D. 1,806 ft.; abnd; sulphur water.

CALDWELL COUNTY

Mills et al's No. 1 McMahon, 275 ft. SW line, 75 ft. SE line of tract, J. Pinchback Sur. .....T. D. 2,337 ft.; drlg.
M. O. Rayor's No. 1 Dunlap, 150 ft. NW and NE lines of farm, Solomon Seal Sur. .....T. D. 2,368 ft.; fishing.
R. R. Ogden's No. 1 O. S. Alexander, 1,300 ft. from N line, 150 ft. from E line of S. Spiller Sur. .....T. D. 450 ft.; drlg.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T. No. 6,894 Sur. .....T. D. 655 ft.; drlg.

DEWITT COUNTY

Gibson & Sturm's No. 1 Clark, Dolores Alderete Sur. ....Rigging up.

DUVAL COUNTY

Coffee et al's No. 1 Jose Garza, center Sur. 49 .....T. D. 825 ft.; drlg.
Magnolia Pet. Co.'s No. 1 W. Benavides, 330 ft. N and W lines of Sur. No. 172 .....Location.
O'Byrne et al's No. 1 Well, B.S.&F. Sur. No. 568 ... .T. D. 1,830 ft.; repairing boiler.
Gus Pape et al's No. 1 Juan Benavides, Blk. 38, Mesquite grant .....T. D. 1,600 ft.; showing oil.

EDWARDS COUNTY

Phillips Pet. Corp.'s No. 2 A. G. Holman, 320 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 .....T. D. 8,230 ft.; abnd.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 .....T. D. 1,600 ft.; drlg.

FRIO COUNTY

A. H. Wray's No. 1 Burns estate, 700 ft. N, 330 ft. E of C Sec. 123, Antone Hupsor .....T. D. 3,716 ft.; fishing.

GOLIAD COUNTY

Gibson Oil Co.'s No. 1 Cyrus Parks, 3,000 ft. S and 2,500 ft. E of NW cor. of Parks ranch, Ferguson Sur. .....T. D. 4,240 ft.; coring.

GUADALUPE COUNTY

McGarrity et al's No. 1 A. Wesch, Jr., 150 ft. to N and E lines of farm, H. M. Thompson Sur. .....T. D. 475 ft.; drlg.
Schleyer, Atherton and Armstrong's No. 1 Ogletree, Robert Smith Sur. .....T. D. 1,300 ft.
Linne et al's No. 1 J. E. Linne, center 263-ac. tract in V. Cortario Sur. .....Moving in tools.
San Antonio Oil & Royalty Co.'s No. 1 Dibrell, 150 ft. from N and W lines of Sec. 6, H.&T.C.R.R. Sur. .....Location.

HAYS COUNTY

J. C. Jones et al's No. 1 Byder, John Ingram Sur. ....T. D. 830 ft.; set csg.

JIM HOGG COUNTY

Magnolia Pet. Co.'s No. 1 Cuellar, Sur. No. 575 .....T. D. 3,609 ft.; fishing.
Peterman & Minahan's No. 1 Palacios, Sur. No. 231 ....T. D. 1,360 ft.; drlg.

JIM WELLS COUNTY

Carsil Oil & Gas Co.'s No. 2 McGill, 900 ft. due N of No. 1 in D. Baldwin Sur. .....T. D. 1,400 ft.; drlg.
Gulf Production Co.'s No. 3 Shaeffer, center of J. T. White Sur. .....T. D. 1,778 ft.; drlg.
Prairie Lee Prod. Co.'s No. 1 Oppenheimer .....T. D. 1,000 ft.; shut down; waiting for heavier rig.
Smith Clark Co.'s No. 1 Cuero Cattle Co. .....Location.
Stewart & Blair's (E. W. Ogden) No. 1 Farris .....T. D. 2,123 ft.; abnd.

KARNES COUNTY

Karnes County Development Co.'s No. 1 Hubbard, 3 miles W of Kennedy .....T. D. 3,010 ft.; abnd.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. .....T. D. 1,165 ft.; shut down.
Sitton et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia .....T. D. 1,420 ft.; waiting on cement.
Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale .....T. D. 2,560 ft.; drlg.
Hicks et al's No. 1 Speck & Wiedner, Thomas Sur. No. 27, 2 miles S of Twin Sisters .....Location.
P. B. Sterling's No. 1 R. J. McCracklin, 1,350 ft. from N line, 250 ft. from W line of the B. G. Owens Sur., 4 miles W from Kendalia .....T. D. 1,600 ft.; shut down.
R. M. Perkins' No. 1 J. Lawhorn, Sec. 10, 2,475 ft. E line, 1,488 ft. S line .....T. D. 600 ft.; moving in new rig.
Permian Oil Co.'s No. 1 Taylor, Sec. 18, G.B.&G. Sur. ..T. D. 1,814 ft.; fishing for bit.

KERR COUNTY

Evans & Gant's No. 1 Selker-Mears, C.C.S.D.&R.G.N.G. Sur. No. 1,605 .....T. D. 1,650 ft.; running 8-in. csg.
Evans & Gant's No. 1 E. Young, A. E. Burge Sur. No. 28 .....Rigged up and shut down.
Evans & Gant's No. 1 Love, in Sur. 1,594, located 660 ft. S of S line of Sur. 1,597 .....Location.
Evans & Gant's No. 1 Jeff Love, 1,320 ft. from W line of Sur. 1,594 and 660 ft. S of S line of Sur. 1,597 .....T. D. 3,391 ft.; to deepen.
B. M. Hatfield's No. 1 Westland, Blk. 23, Westland Subd. to Kerrville .....T. D. 436 ft.
Evans & Gant's No. 2 Jeff Love, SW cor. Sec. 1,593 .....Rigging up.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. .....T. D. 850 ft.; standing.
Kamon et al's No. 1 Hodges .....T. D. 2,675 ft.; drlg.

LASALLE COUNTY

Fred W. Vales' No. 1 Coleman, 200 ft. from S and E lines of SW Sec. 514, B.S.&F. Sur. .....T. D. 40 ft.; standing.

LIVE OAK COUNTY

Burke-Greis Oil Co.'s No. 1 West Ranch, James Vaughan Sur. .....Location.
Simpson Oil Co.'s No. 1 Wedding, 2 miles N of Three Rivers .....T. D. 2,410 ft.; abnd. dry.
Illinois Exploration Synd.'s No. 1 Reeves-Brown, 1,300 ft. S of Sellers tract, 1,800 ft. E of Ry .....T. D. 2,145 ft.; standing.
Southern Exploration Co.'s No. 1 Ponder, B.S.&F. Sur. in eastern Live Oak .....T. D. 4,520 ft.; abnd. dry.
Sid Keoughan's No. 1 C. E. Terrell, 600 ft. from N line, 1,000 ft. from E line, Dan O'Boyle Sur. .....T. D. 2,840 ft.; shut down.

LEE COUNTY

Burt et al's No. 1 R. C. Saunders, J. Maxmilian Sur. ....T. D. 3,312 ft.; drlg.
A. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. .....T. D. 3,103 ft.; drlg.
C. B. Polk et al's No. 1 Stoltz, Hiram Donohue Sur. ....T. D. 1,715 ft.; fishing.

McLENNAN COUNTY

C. E. Groone et al's No. 1 League .....T. D. 1,230 ft.; shut down.

McMULLEN COUNTY

Belt Pet., Inc.'s No. 1 Martin, 150 ft. NW line, 150 ft. to SW line of E. Melon No. 212 Sur. .....T. D. 28 ft.; standing.
Camp and Stanolind's No. 1 Murphy, 1,845 ft. from W line, 165 ft. from N line, Sur. 123 .....Moving in tools.
Whall, Scherer et al's No. 1 Shiner, Henry Brewer Sur...T. D. 1,630 ft.; drlg.

MEDINA COUNTY

J. H. Hickey's No. 1 Odon, H. Castro Sur. No. 175 .....T. D. 830 ft.; abnd.
Donaldson Oil & Gas Co.'s No. 2 Adams .....T. D. 130 ft.; standing.
Sunflower Oil Co.'s No. 1 Mofield, J. Brothag Sur. No. 532 .....T. D. 1,630 ft.; drlg.
Yancey Development Co.'s No. 1 Fassler, Sur. No. 801....T. D. 1,350 ft.; showing oil and gas.

MILAM COUNTY

Dil-Tex Oil Corp.'s No. 1 Dilbeck, 450 ft. N and E lines of farm, Fernando Rodriguez Sur. .....T. D. 748 ft.; drlg.
Rheubotham & Tate's No. 1 Johnson, 325 ft. from N line, 250 ft. from W line of 40-ac. tract, D. Robinson Sur. .....T. D. 2,100 ft.; shut down.
Red Bank Oil Co.'s No. 1 Foster, A. G. Berry Sur. ....Derrick.
McMasters and Pomeroy's No. 1 Pluger, J. J. Acosta Sur...T. D. 1,136 ft.; shut down.

J. E. McKee et al's No. 1 Littleton, 150 ft. from N and 225 ft. from W line of lease, C. Chevalier Sur. .....T. D. 510 ft.; shut down.
Peggie Brothers' No. 1 M. Reed .....T. D. 780 ft.; shut down.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW Sec. 175 .....T. D. 1,700 ft.; drlg.
Gant-Kilgore and Evans' No. 1 A. D. Auld, C.C.S.D.& R.G.N.G. Sur. No. 23 .....T. D. 3,280 ft.; running 6-in. csg.

STARR COUNTY

B. B. Tips' No. 1 F. Dayno, Lot 1, Porcion No. 81 .....T. D. 332 ft.; fishing.
Menyard et al's No. 1 Sealbury, 150 ft. from E line, 6,-550 ft. from N line, Share 5, Porcion 75, Jurisdiction of Carmargo .....T. D. 411 ft.; tested dry.
Los Olmos Oil Co.'s No. 4 Kelsey-Bass, 2,208 ft. from W line, 60 ft. from N line, Blk. 7, Subd. Porcions 75, 76 and 77, Jurisdiction of Carmargo .....T. D. 143 ft.; drlg.

SAN PATRICIO COUNTY

Aransas Oil Co.'s No. 1 Welder, 15 miles N of White Point .....T. D. 3,634 ft.; estimated 50,000,-000 ft. gas.
George B. Pickett's No. 1 Baldwin, 900 varas due E of Denton, 1,200 ft. S of the SE cor. of O'Neill Sur., Abstract 211 .....T. D. 4,020 ft.; shut down.
Saxet Oil Co.'s No. 1 Carroll, 8 miles N of Gregory ....Derrick.

TRAVIS COUNTY

Fort Bend Oil Co.'s No. 1 Engleman, 450 ft. N line, 150 ft. W line of 108-ac. tract, J. H. Denson Sur. ....T. D. 1,800 ft.; shut down.
F. W. Fuchs' No. 1 Ballersted, A. Alexander Sur. .....Derrick.
Franklin et al's No. 1 Wilson, A. Alexander Sur. .....Derrick.
Waldron et al's No. 1 Cook, D. H. Minor Sur., 8 miles SW of Austin .....T. D. 645 ft.; drlg. shale.
Taylor Temple Oil Co.'s No. 1 Smith, L. Kimbro Sur....T. D. 763 ft.; tested salt water.
Bohls & Wilson's No. 1 Norton, J. Cole Sur. .....Derrick.

WEBB COUNTY

Cole Pet. Co.'s No. 4 Benavides, Sur. No. 1,601 .....T. D. 1,450 ft.; drlg.

WILLIAMSON COUNTY

Fritz Fuchs' No. 1 L. W. Fuchs, Cartwright Sur. .....T. D. 2,176 ft.; tested dry; shut down.
Wilburn et al's No. 1 Caroline Hurts, P. Coursey Sur. ....T. D. 1,327 ft.; shut down.
Wilson et al's No. 1 Walker .....T. D. 2,260 ft.; shut down.

WILSON COUNTY

A. M. Blume's No. 1 Nickolson, C. Diaz Sur. .....T. D. 460 ft.; drlg.
Stover & Wren's No. 1 John Ruess, 10,400 ft. from SW line, 2,300 ft. from NW line, O. A. Trevino Sur. No. 19 .....T. D. 1,100 ft.; shut down.

ZAPATA COUNTY

T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. .....Rigged up and standing.
Benson Oil Co.'s No. 1 S. Vela, W cor. of Blk. 12, Sur. No. 259 .....T. D. 1,440 ft.; drlg.
Bill Henry et al's No. 1 Gopher Trust estate, Borrego grant .....T. D. 1,398 ft.; laying water line.
Lowe & Rogers' No. 2 P. Benavides, 170 ft. from SW, 340 ft. from NW line, Blk. 13, Sur. No. 613 .....T. D. 1,340 ft.; tested 15,000,000 ft. gas; waiting on cement.
Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr., et al, 175 ft. NE line, 175 ft. SE line Poppas Subd., Porcion 33 and 34, Blk. 1, Sur. 2 .....T. D. 2,035 ft.; reaming.
National Oil Co.'s No. 1 Zapata Trust Estate, 617 ft. NW line, 96 ft. NE line, Blk. 97, De Prom Subd., Porcion 6 .....T. D. 690 ft.; drlg.
National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant .....T. D. 1,148 ft.; standing.
Mackenzie & Talmadge's No. 1 Trevino, 400 ft. SE line, 200 ft. NE line, Blk. 6, Sur. No. 4, Porcion 2 and 3 .....T. D. 520 ft.; standing.

GULF COAST FIELDS

(Continued from Page 48)

This well came in flowing an estimated 1,000 bbls. daily from sand at 3,730 feet. This is the first new well completion at this dome in over a year. It is the first test drilled by these operators for N. W. Hunter and associates who recently leased approximately 3,500 acres around the north flank of the dome.

Victor Oil Co. (V. H. Borsodi and others) worked over its No. 1 Gulf fee, south flank of the North Dayton Dome, completing it in sand at 4,050-72 feet, flowing 1,500 bbls. daily on a three-quarter-inch choke, pressure 380 pounds. The well, however, after three days sanded. Total depth of the hole is 5,134 feet. It was plugged back to 4,882 feet, where it tested salt water, and then was plugged to 3,441 feet and sidetracked to the present depth.

At Clay Creek, Sun Oil Co.'s No. 5 Janner blew out while drilling at 1,089 feet, blowing around the surface casing and cratering the hole. It has been junked and abandoned.

CALIFORNIA FIELDS

(Continued from Page 56)

Ohio Oil Co. to get production in the Temblor.

Lost Hills Field

There were no developments of special importance in the Lost Hills Field as work in this area has been delayed for some time by the high headwater characteristic of this entire general area. The Universal Consolidated, while still working on its Temblor test, No. 49 in Section 32-26-21 in the Lost Hills Field, contemplates drilling a second test northwest of the present hole. This is of special signifcance because a number of geologists are of the opinion that the possibilities are considerably more favorable in the western end of the field. The Shell Oil Co. is still attempting to develop commercial production in No. 1 Williams, a wildcat in the Semitropic section of Kern County, but this deep test, bottomed at 9,700 feet and subsequently plugged back to 8,530 feet, has not yet responded and the outlook is not at all encouraging. Another test appears justified, however, as No. 1 Williams showed considerable promise during the course of work and the failure to show production may be due to water trouble.

The Barnsdall Oil Co., which is developing the Bell Luton and other leases in the Elwood Field in conjunction with the Rio Grande, is rotating ahead in No. 1 Bishop Evans, a deep Sespe test at 5,050 feet. No. 14 Bell, another Sespe test in this field, is rotating ahead at 4,000 feet with bottom of the hole at 4,392 feet. Upon conclusion of this redrilling job, it is probable that a production test will be made. The company recompleted No. 8 Bell Luton during the early part of the week and this well, which has been shut in for some time, was returned to production flowing 6,025 bbls. of 36.2 gravity oil per day. In the Santa Barbara Mesa Field, the Palisades Petroleum Co. has recompleted No. 3 Meigs after redrilling and deepening it from 2,095 feet to 2,175 feet, and was rewarded with a 355-bbl. flow, the oil testing 22.1 degrees and showing a cut of 3 per cent. Drilling operations in the Santa Barbara Mesa Field have been rather negligible during the past seven months due to low prices for crude oil.

PRODUCING 50 YEARS

RICHBURG, N. Y., May 2.—The Richburg Hill well completed 50 years ago and which was the first good well in the Allegany Field is still producing oil. The completion of this well late in April, 1881, was the signal for a rush of oil men from the Pennsylvania fields and in a short time Richburg was a town of 10,000 people with a daily newspaper, the Richburg Oil Echo, which made oil history. The Echo was owned and edited by the late P. C. Boyle, and was his first newspaper venture.

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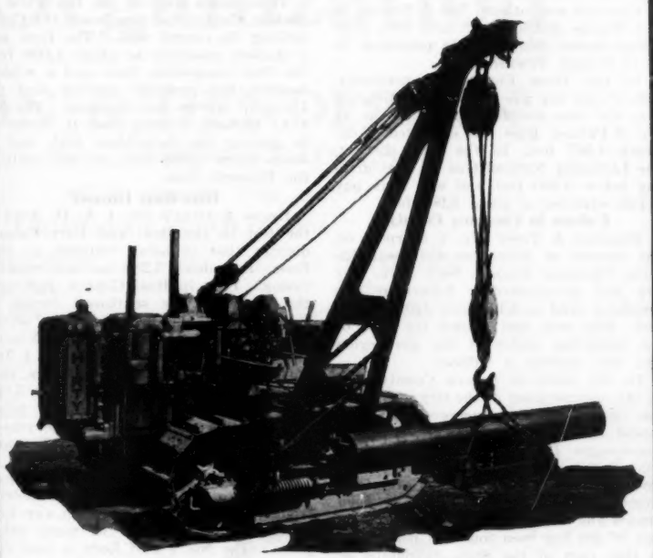

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FOUR OPERATORS IN TIOGA FIELD SELL

(Continued from Page 51)

depth in some parts of western New York.

Big Well in Wayne Field

A 12,000,000-foot initial producer was completed by Whittmer Gas & Fuel Co. on the Olesewski farm a short distance north of the village of Wayne, Schuyler County, at a total depth of 1,761 feet. This is the largest gasser brought in on the New York side of the Corning gas region. DeGolier and others' No. 1 Wyss, on the Yates-Steuben County line, in the Wayne district, is about ready for completion.

The Lamoka Power Co.'s No. 1 Disbrow, near Wayne, was dry at a total depth of 2,114 feet. Salt water was found at that depth with no sign of gas and the hole was abandoned. This well is located in Tyrone Township, Schuyler County. It was the second test of the Lamoka Power Co., the first, No. 1 Bigelow, was a 9,000,000-foot well.

Crandall and others' No. 1 Ernest, in the Wayne district, will have been completed before this report is published. It is in Tyrone Township.

In the Tioga County, Pennsylvania, side of the big gas region, the Allegany Gas Co. was due for completion on its No. 2 Palmer. Pipe was cemented. Total depth 4,067 feet. In the same district, the Lycoming Natural Gas Co. was drilling below 3,800 feet and was near pay depth, expected at about 3,900 feet.

Failure in Chemung County

Benedum & Trees' No. 1 Murphy, on the summit of Jerusalem Hill near Elmira, Chemung County, New York, was dry and pronounced a failure in the Oriskany sand at 3,175 feet, drilled in 30 feet. This well was drilled far east of the operating center of the gas region and was strictly a wildcat.

To the north in Seneca County, and in the neighborhood of the city of Waterloo, about 100,000 acres have been leased by Penn-Trumbull Co., Belmont Quadrangle Drilling Co., Pennsylvania Fuel Supply Co. and others. The leasing covers the townships of Lodi, Covert and Romulus. Most of the land is between Seneca and Cayuga Lakes. Small production of gas has been found in past years in that part of the State at depths of about 2,000 feet, but it is believed now that tests may have to drill 5,000 feet to get big production.

The Witmer Oil & Gas Co. is drilling a test, No. 1 Broughton, at South Canisteo, Steuben County, New York. It is below 1,230 feet. The Pittsburgh Natural Gas Co. has leased large acreage in Jasper, Greenwood, Canisteo and Troupsburg Townships in Steuben County.

Few of the many wells now drilling in the Tioga County, Pennsylvania, sector are deep enough to have arrived at an interesting point. The Lycoming Gas Co.'s No. 1 Shoemaker, in Lawrence Township, which failed to find gas in the 4,000-foot horizon, is drilling at 5,510 feet.

MICHIGAN FIELDS

(Continued from Page 50)

man Township, Newygo County, at a depth of about 5,500 feet. The well is one of the deepest now drilling in western Michigan and recently reached the bottom of the Salina and entered the Niagara limestone.

M. I. Diamond's No. 1 Fee well, NW NE SW, Section 15-20n-17w, Grant Township, Mason County, struck water at a depth of 654 feet after having a small show of gas at 640 feet. One large gas well struck more than a year ago in this vicinity has been the incentive for the drilling of several unsuccessful wells in search of the shallow gas pay sands. Eddie M. Self, Muskegon contractor, drilled the well with the only rotary rig now operating in Michigan. Guy Carlton Irvine of Muskegon this week started a well in Pingree Park, Allegan, near the location of several wells which struck oil in Allegan about 40 years ago.

SOUTHWEST TEXAS FIELDS

(Continued from Page 52)

found porous enough west of San Antonio to carry oil. The Wray well will throw some light on this question.

In the Chittim Field in Maverick County, Texas Gas Utilities completed the No. 6 Chittim at 5,590 feet and it made only 4,500,000 feet of gas. It will be deepened 10 feet to see if that will improve it. It is in the Glenrose but may be slightly lower than the other Chittim wells.

In Zavala County, Texas Gas Utilities is completing the No. 5 Pryor at 764 feet for a small gas well.

In Medina County 4 miles south of Hondo where four or five wells were completed a few years ago at about 350 feet the Medina Oil & Gas Co. is building a small grease plant and will drill some additional wells and further develop the field. The discovery well in that field made the remarkable production of 100 bbls. a day at 350 feet for some little time.

Three miles west of the Ina Field in Medina County the Sunflower Oil Co. is drilling its second well. The first was a shallow producer at about 1,000 feet, the first completion there and a wildcat location but probably proving that the Ina sand extends that far west. The No. 1 L. Mofield, drilling near it, seems to be getting the formations high and is down below 1,600 feet and will drill to the Edwards lime.

Kerr-Real District

Evans & Gant's No. 1 A. D. Auld is the test in the Real and Kerr County district that is being watched at this time. It is down 3,280 feet and running casing. It is in Real County, just over the line from the southwest corner of Kerr County and located in the southwest corner of Survey 23. It is 5 miles south and a little west of the No. 1 Jeff Love, drilled by the same operators, that has been pumping a little oil at 3,391 feet. Many operators are much interested in this whole area for the reason that the production is from the Pennsylvania formation and there is plenty of Pennsylvania yet that has not been drilled into. A pool in that district would be 75 to 100 miles from any production with a chance for many other pools. The No. 1 Jeff Love is now rigging up and will be deepened to at least 4,400 feet.

The No. 1 Haby, located 9 miles south and 5 miles east of the No. 1 Love, is now drilling and down below 1,700 feet. It stood idle for some time.

The No. 2 Jeff Love is rigging up a mile south and slightly east of the No. 1 Love and the No. 1 Mears-Seiker, 4 miles northeast, is down below 1,650 feet and drilling. The No. 1 Estelle Young, 5 miles north of No. 1 Love, changed contractors lately and the new contractor has rigged up and is now standing.

The No. 1 Jeff Love is thus circled with tests, the No. 1 J. M. Auld, 5 miles northwest in Real County, having recently been abandoned, the only failure thus far in the district, but it disclosed the fact that there is 70 feet of real sand in the country and once a test is drilled into it on structure it is likely to "pay off."

Pettus Area

Probability that the United Production Co.'s No. 33 Ray in the Pettus district in Bee County would be a producer was referred to last week. It is now in and the initial production was 300 bbls. at total depth, 3,993 feet. It is 700 feet south of No. 31, which is the test located midway between the townsite pool on the west and the Ray-McKinney on the east and which has connected them up as one field.

J. M. Davis is rigging up at the southwest corner of the Pettus Townsite for a test a half mile west of Mauldin, who has a showing of oil at the right depth for the regular Pettus sand but has not tested yet. Seven miles west Mauldin & Fisher's No. 1 Kimball swabbed 35 bbls. of oil in eight hours and looks like a well. It will not flow and is to be put on air lift.

Outside of these the thing in the Pettus area to attract next attention is the United Production Co.'s No. 37 Ray, location for which has been made 3,200 feet from the southwest line and 996 feet from the southeast line of the Willis A. Moore Survey. The location is about 1½ miles southeast of the nearest producer in the Pettus-Ray-McKinney Pool and it is about 1,500 feet north and slightly west of the company's No. 11 Ray which made a lot of gas but was lost at 3,815 feet. It is 4,000 feet southwest of the company's No. 3 Ray which drilled to 6,054 feet and plugged back to 4,060 feet where it made a lot of gas and about 15 bbls. of oil. The No. 37 Ray is being drilled to prove a big space of country on which the company holds leases. The No. 11 and No. 3 Ray indicate that it has possibilities.

FRENCH REFINERIES OFFER OUTLET FOR U. S. CRUDE

(Continued from Page 124)

of kerosene, 45,000 tons of lubricating oil, and 77,300 tons of gas oil.

4. Societe Generale des Huiles de Petrole. This company is a subsidiary of Anglo-Persian, and has refineries at Courchelettes and Lavera. It is allotted production of 169,000 tons of gasoline, 26,000 tons of kerosene, 23,000 tons of lubricating oil, and 35,000 tons of gas oil.

5. Cie. des Prod. chim. et. Raffineries de Berre (St. Gobain), with refinery at Berre. The company is allotted output of 158,000 tons of gasoline, 17,500 tons of kerosene, 30,000 tons of lubricating oil, and 17,250 tons of gas oil. Franco-Egyptienne participates in this permit.

6. Vacuum Oil Co. S.A.F. and Cie. Industrial des Petroles (Sinclair), with refineries at Port Jerome and Frontignan. These companies are jointly allotted output of 143,000 tons of gasoline, 18,000 tons of kerosene, 37,000 tons of lubricating oil, and 15,000 tons of gas oil, and Sinco and Belpetrole, affiliated companies, share in the permit.

7. Raffinerie de Petrole du Nord (Petrofina), with refinery at Dunkirk. This company is allotted production of 108,000 tons of gasoline, 15,000 tons of kerosene, 32,000 tons of lubricating oil and 12,900 tons of gas oil. Companies participating with Petrofina are Union Gen. des Naphtes, Petronaphte, Olenaphte, Carb. et Prod. de Synthese, Huiles Goudrons et Derives, and Petr. du Languedoc.

8. Raffineries de Petrole de la Gironde, with refinery at Bec d' Ambes. This company is allotted production of 135,000 tons of gasoline, 15,000 tons of kerosene, and 12,400 tons of gas oil.

9. Brest-Port Petrolier, with refinery at Brest; allotted output of 100,000 tons of gasoline, 10,000 tons of kerosene and 8,300 tons of gas oil. This permit is participated in by P.E.N., Petroleum Products, and Remoise des Petroles.

10. S. A. d'Exploitations Minieres de Pechelbronn, with refineries at Merkwiller and Saint-Marc; allotted production of 72,000 tons of gasoline, 9,000 tons of kerosene, 18,000 tons of lubricating oil, and 10,500 tons of gas oil. This permit is participated in by Alsacienne des Carburants, and Huiles Antar.

11. Les Consommateurs de Petrole, with refinery at Donges; allotted output of 20,000 tons of lubricating oil and 2,500 tons of gas oil. This company also participates in the quantities allotted to Compagnie Francaise de Raffinage.

Modify Allotment

The terms of the permit allow holders to modify their allotment up to 10 per cent, either way, on six months' notice, for a period of six months. Any of the four specified refined products re-exported are not included in the quantities specified in the permits. Within four months of the date of receiving the permit, licensees are required to satisfy the French government that they have resources sufficient to insure their refineries being in normal operation not later than October 1, 1934, and must likewise obligate themselves to manufacture not less than 50 per cent of the quantities specified in their permits.

Minor stipulations in the permits require the employment of specified percentages of French subjects in the personnel of the companies, for the use of French-made material in refinery construction, and deposit of guarantees, these latter to be refunded in part as refineries near completion, and in part as the statutory reserve stocks are accumulated.

National defense is provided for in the permits by clauses which obligate the licensees to supply products as dictated by the interests of national security and defense. Permittees are also obligated, if called upon by the French government, to participate in the organization of any groups of national importance formed to acquire crude petroleum.

More than a dozen oil refineries are now under construction in France, according to a survey just completed by the United Press. Some of these new plants will be completed and in operation within the next year, while completion of others is more distant.

Standard Oil and Royal Dutch interests are completing refining plants which, according to government decree, must be in operation before October 1, 1934. Standard of New Jersey, in association with Gulf and Atlantic Refining, is building a huge plant at Port Jerome, near Rouen, and Vacuum Oil Co. is constructing a new refinery on a plot close to the site of the Standard-Gulf-Atlantic project. Branch railroads are being constructed to Port Jerome from Rouen, although most of the oil traffic will be handled by river barges.

The new Royal Dutch refinery is at Petite Couronne, located on the Seine, and this refinery, it is said, will equal the Standard-Gulf-Atlantic plant in capacity.

Anglo-Persian Oil Co. has started construction of a refinery at Courchelettes. Until completion of new refinery projects, the various companies licensed by the French government to import crude petroleum will continue to bring into France refined products, up to their allotments.

Upon completion of the Irak pipe line, the French government will compel refiners operating in France to purchase a specified portion of their crude oil requirements from French Petroleum Co., the government-controlled company. While the amount of these compulsory purchases has not yet been fixed, it is expected that the figure set will be 25 per cent.

BARTON HEADS REFINERS IN ARKANSAS-LOUISIANA

(Continued from Page 124)

Lion Oil & Refining Co., El Dorado, Ark.; D. P. Hamilton, Root Refining Co., Shreveport; B. H. Gray, Spartan Refining Co., Shreveport; J. H. Riedemann, Crystal Oil Refining Corp., Shreveport; J. E. Shatford, Ouachita Valley Refining Co., El Dorado, Ark.; DeRalph Frizzel, Macmillan Petroleum Corp., El Dorado, Ark.; W. B. Hassett, Kettle Creek Refining Co., El Dorado, Ark.; W. E. Winship, Chalmette Petroleum Corp., New Orleans, La.; F. R. Schneider, Simms Oil Co., Dallas, Tex.; and George H. Hartung, Houston Oil Co., Camden, Ark.

The executive committee is composed of J. H. Riedemann, chairman; T. M. Martin, W. E. Winship, B. H. Gray and D. P. Hamilton. The manufacturing committee is composed of B. P. Crittenden, chairman; R. T. Colquette and J. J. Allison. The finance and budget committee is C. M. Lamason, chairman; J. H. Riedemann and H. Canon.

B. P. Crittenden, of the Louisiana Oil Refining Corp., and Howard Bennette, manager of the Western Petroleum Refiners Association, Tulsa, spoke at the meeting.

HEADS PHILADELPHIA CO.

PITTSBURGH, Pa., May 4.—Frank R. Phillips, formerly senior vice president of the Philadelphia Co., was elected president at a meeting of the stockholders. He succeeds John J. O'Brien, president of the Standard Gas & Electric Co., of which the Philadelphia Co. is a subsidiary.

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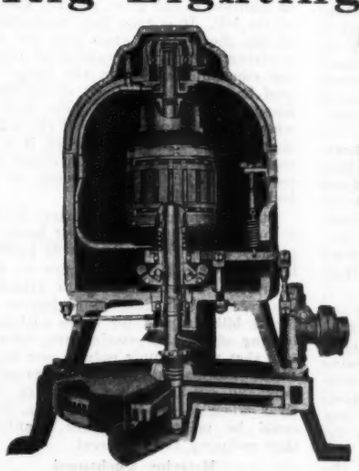

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Change from Volumetric to Therm Basis

Questions Arising When Transition Is Made. Misunderstanding as to Meaning of Method Corrected. Mode of Billing

By F. L. Griffith
Assistant Secretary, Peoples Gas Light & Coke Co., Chicago*

One of the first problems involved in changing from the volumetric to the therm basis of billing might perhaps appear to be that of determining whether such action is to be taken. I have assumed, however, that the reasons which the companies supplying gas in and near Chicago found sufficient to cause them to decide upon the advisability of making the change are already fairly well known and understood, and that it was not intended that this paper should cover that phase of the matter in any extended fashion. An announcement issued on behalf of the Peoples Gas Light & Coke Co. at the time the therm rates were first introduced by it forecast the completion of the Texas-Chicago natural gas pipe line in 1931 and continued as follows: "The company's product then will be a mixture of natural and manufactured gas. It will have a substantially greater heating value per cubic foot than the gas now supplied, and the customer will use less gas by volume to obtain the same results in cooking or heating generally. The exact proportion of the mixture is an operating problem of the company and has not yet been determined. Under the therm basis of billing the customer will pay only for the heating value of the gas furnished, regardless of the volume of the gas in which the heating value is contained.

"If the commission approves our proposal to bill our customers on the therm basis for the several months preceding the introduction of natural gas, the fairness of the new system of billing will have been established and the change from the present fuel to one of different heating value will be effected without creating any confusion in the minds of our customers. The proposed therm rates are so designed that no change will be made in the cost of gas service to any customer at this time. Reductions in the level of the rates, consequent upon the introduction of natural gas, must await more exact information than is now available to the company. Meantime the step proposed is a constructive one in the direction of adjusting the community and the company to the anticipated change in conditions."

Standard of Heating Value

It should be noted here, perhaps, that billing on the therm basis has not meant, and should not contemplate, calculation of gas consumption on the basis of actual heating values of the gas as distributed from day to day, but rather on the basis of the standard of heating value established as a minimum by the regulatory commission and maintained by the company. In other words, while the gas as distributed may have a heating value slightly higher than the requirement; it varies a trifle from day to day for operating reasons, and calculations of therms used on the basis of such heating values would be impracticable.

Of not nearly so much importance, but nevertheless a secondary reason for the adoption of the therm basis is the fact that as a unit of energy the cubic foot of gas was already leaving much to be desired. With great quantities of by-product gases of various heating values, oil refinery gases of different heating values and coke oven and water gases of its own manufacture and still other heating values all available to the same local distributing company, some more uniform unit of measure of the energy value was rapidly becoming not only desirable but necessary to permit the making of sensible statistical and accounting comparisons. The Peoples Gas Co. has for a number of years been computing costs on the therm basis, although at the time the practice was begun there was no thought of placing the rates on a therm basis.

Another feature of therm rates which is sometimes considered advantageous is that the selling unit is reduced from the comparatively large one of a thousand feet to one about one-fifth the size in most cases. The selling unit thus becomes one of which the cost may be expressed as a few cents, rather than one expressed in sums approximating $1.

If there ever comes to be a fairly general adoption of therm rates in substitution for volumetric rates it will have the effect of making comparisons of rates and of cost and output data among utilities considerably easier and more exact than at present.

Without further attempt to discuss reasons for making the change from volumetric to therm rates, let us consider the questions actually arising when the change is made, proceeding on the assumption that the cost of gas to any customer is to be the same on the therm basis as it would have been on the corresponding volumetric basis of billing. The questions may seem to be multitudinous. In actual practice as we have found it, most of them resolve into minor details.

Mathematical Conversion

If the cost of gas to the customer is to remain the same, the first problem encountered is the mathematical conversion of the volumetric rates to equivalent therm rates.

Take as an example the following block rates:

First 400 feet for 60 cents.
Next 49,600 feet at 90 cents per M.
Over 50,000 feet at 85 cents per M.
Minimum bill 60 cents.

The exactly equivalent therm rate, assuming a 530 B.t.u. gas, would be:

First 2.12 therms for 60 cents.
Next 262.88 therms at 16.9811 cents per therm.
Over 265 therms at 16.0377 cents per therm.
Minimum bill 60 cents.

Since the fractions of therms and fractions of cents make the rate seem complicated and are hard to handle in practice, the rate could be changed as follows:

First 2 therms for 58 cents.
Next 24 therms at 17 cents.
Next 239 therms at 16.9 cents per therm.
Over 265 therms at 16 cents per therm.
Minimum bill 60 cents.

This last rate would give exactly the same revenue as the cubic foot rate for all customers using 7,200 feet or less of gas per month, which would be a very large percentage of any company's customers. No customer's bill would be increased. Users of large quantities of gas would benefit by a reduction of a cent or so per bill per month due to dropping the fractional part of a cent in the last step of the rate. A number of such practical variations of the above rate could be made which would have the same effect.

No Change in Cost

To demonstrate to customers that there has been no change in cost of gas to them, the volumetric rate may also be filed as an optional rate with the understanding that all customers would be billed under the therm rate unless they request billing under the volumetric rate. This plan has been operated by the Peoples Gas Light & Coke Co. since the therm rates were put into effect in August, 1930, and up to the present time only 304 out of a total of about 850,000 customers have gone back to the cubic foot rates. In other words, 99.97 per cent of these customers are being billed on the therm rates. How long such optional rates should remain in effect depends largely upon public relations. In some very progressive communities where customers readily take up with newer ways of doing things, or with certain classes of business where this is true, particularly in the case of industrial customers, the optional rates might be withdrawn after a very short period. In other communities it might foster better public relations to leave them in effect for an unlimited time or until some new development might later make termination of the option period desirable. As the older customers, who are more opposed to change, drop off the books, being replaced by a younger generation, the group of customers desiring to be billed at the cubic foot rates would gradually dwindle to nothing and the rate would be effectively forgotten although still on file. It may sometimes happen that allowing only a short period for the exercise of the option to return to the volumetric basis of billing may bring about more demand for it than would occur if the option period were unlimited.

After the therm rates and their equivalent counterparts are prepared, there is the problem of convincing the regulatory commission of the wisdom of such a change. It is not difficult to demonstrate mathematically that any customer's bill will be the same under either method of billing, neither is it difficult to show that the therm method is logical and scientific. In the matter of assuring the commission that customers will get their money's worth, it can be shown that the commission has been checking the heating value supplied under the volumetric plan often enough to know that the customers are receiving the heating value to which they are entitled, and that it is no more difficult to continue this check when rates are on the therm basis than when on the volumetric basis. It might appear that making the mathematics of billing more complex would make it easier for the company to juggle, or manipulate, its figures. This is hardly worthy of note, but it seems sufficient to observe that too many people would be involved in making such manipulation to permit any company to attempt such a foolish thing even if it were inclined to do so.

Making Rates Effective

Then there is the question as to whether the therm basis of billing should be applied to all customers or to only certain classes. As far as the educational work is concerned it is probably necessary to apply it only to the domestic and small commercial customers such as small stores and offices. The larger customers —that is, industrial, hotel, restaurant, and house-heating customers—are, or should be, so well acquainted with heating values through calculating their heat requirements in B.t.u.'s that it would not be necessary to educate them. However, the same reasons which make the application of therm rates to one class of customers desirable render it desirable to all of them, whether the educational effort is needed or not.

Having obtained the permission of the regulatory body to make the rates effective, the next step, and perhaps the most important one, is that of familiarizing the public with the plan. Enough publicity should be given throughout the company and community so that every one has an opportunity to become very familiar with the principles involved, the reason for making the change, and the method of calculating bills. Above all, the employes should be well instructed so that they can intelligently answer any questions put to them by customers or straighten out any misunderstanding which comes to their attention. A very competent and diplomatic person should be charged with the duty of supervising the replies to all complaints of customers, one who will make a real effort to see that the customer understands the principles involved and is satisfied with the treatment he is getting. Detailed discussion of the plan published in the newspapers immediately in advance of the change, inserts with the customers' gas bills for at least the first month or two after the change, and for several months a clear and concise explanation and example given on the back of each gas bill showing how the bills are figured under the new system and also under the old, showing that the bill is exactly the same under both methods, should be sufficient publicity to enable all customers to become familiar with the plan without bringing it to their attention too much and antagonizing them in that manner. The proper handling of this publicity and public relations problems will be more important to the company than any other single element in connection with the change.

Few Alterations

The alterations that have to be made on the bill are few and easy to make. It is perhaps best to drop the reference to the difference between meter readings as representing so many cubic feet, and merely call it the difference in meter readings. Then it is necessary to insert, in addition to the other information now shown on the bill, the number of therms represented by this difference. The number of therms, gross, and net amount of bill can be taken from rate cards similar to those used with volumetric rates, so the billers have no additional calculations to make.

To anyone not familiar with usual billing practice it may appear that in the preparation of each individual bill it will be necessary physically to multiply the number of cubic feet by the therm conversion factor, then to apply the rate to the therms used, and finally to arrive at the amount of the bill. Most of us know that this is not actually done. Rate cards are prepared for the use of the billers which show, for each possible unit of gas consumption the gross and net amount of the bill. With therm rates it is necessary to show, on the rate card, the number of therms, corresponding to each unit, in cubic feet, of meter registration, in addition to the gross and net amounts of the bill. It is true that memorization of the therms and gross and net rates applying to the small number of units of gas consumption within the range covered by 90 or 95 per cent of all bills is just a little slower and more difficult, when the therm equivalent of the volume must be memorized, than when it is not required. In practice any increased time required in billing, on account of this fact, is negligible.

Since the number of customers desiring to be billed on the cubic foot basis will usually be quite small, it will probably be simpler and less expensive to have flyers or stickers printed to attach to the regular bills, instead of having different bills printed for these customers, leaving off in the printing any information that would apply only to one month. Such information can be inserted in longhand or by rubber stamp on each flyer when used. By doing this, flyers could be printed in larger quantities, thus reducing the unit cost.

Metering Unchanged

As far as the metering is concerned, there is no reason for making any change in the present method. The index of any meter could, of course, be changed to register in therms so long as the heating value of the gas remains unchanged. The advantage, however, would be so slight that it could never offset the expense of making the change. The application of the meter is not a separate operation for each meter in any event.

*Before American Gas Association Third Annual Accounting Conference, Chicago.

The difference between meter readings, representing cubic feet, and the corresponding number of therms, are set up on billing charts and the biller in preparing any particular bill simply uses the number of therms corresponding to the particular difference in the meter reading.

When a bookkeeping system without books is used, there will be no change in the bookkeeping operations except that, if a bookkeeper wants to refer to any customer's consumption of gas, he will have to refer to the meter reading book and then to the rate card to get the number of therms corresponding to the number of cubic feet registered by the meter. The billers and checkers are the only ones who would be concerned with the change. Where ledgers are used, it would be necessary to insert an extra column after the column showing the cubic feet consumption in which the therms consumed could be shown.

Future Developments

In the event that future developments in the business of any company should be such as to render desirable a change in heating value the prior adoption of the policy of expressing rates in therms will probably facilitate the transition. As an illustration, if without regard for its accuracy we make the assumption that the cost of serving the public, and the value of the service to the public, vary with the heating value of the gas distributed, no change would be required in the therm rates. While these assumptions are perhaps extreme, they indicate a possibility the practical value of which will differ in every case. Should the case ever arise where, with a change in heating value, existing therm rates might be continued in effect after the change, any optional cubic foot rates must be altered to reflect the change in heating value or, as an alternative, if the number of consumers being billed on the cubic foot basis were small, and the regulatory commission were willing, such cubic foot rates may very well be canceled.

In closing, may I summarize the problems involved in adopting the therm basis of billing. Essentially there are only three which have any serious importance:

First, whether to adopt therm rates or not, the solution of which involved a consideration of the advantages to be derived therefrom by a particular utility, and is likely to be of most concern to any utility contemplating a substantial increase in the heating value of the gas distributed by it.

Second, how to demonstrate to regulatory authorities that the change will be equitable to the consuming public and will not encounter serious opposition from the public.

Third, how to apply the therm rates in the actual process of billing so as to bring about the readiest general acceptance of them and the clearest understanding of their nature and purpose.

It has been the experience of the companies in the Chicago area that, when the utility has once decided the first of these, namely, that therm rates are to be made effective, the last two present no difficulties which cannot be overcome with a reasonable amount of effort and attention.

NEW HIGH PRESSURE ABSORPTION PLANT

(Continued from Page 38)

the flow indicators and check valves into the tops of the high-pressure absorbers.

The vapor line from the top of the evaporator carries a mixture of natural gas dissolved in the oil in the absorbers, gasoline vapor, steam, and a small amount of oil vapor. This flow enters the box-type dephlegmator built on top of the cooling tower. Water is admitted to the box as required by a motor valve in a line shunted off of the water circulating system and actuated by a recording temperature controller, the bulb of which is in the outlet header from the dephlegmator coils. The pipes in the dephlegmator box rest alternately on 2-inch and 4-inch supports so that pockets are formed which insure a positive washing of the vapors by the liquid, and the long path gives a gradual cooling and produces hot dephlegmation. The mist extractor on the outlet header from the dephlegmator separates the output into liquid and gaseous flow. The liquid, consisting of a mixture of water, light absorption oil fractions and heavy gasoline fractions, drops from the bottom of the mist extractor to a dewatering tank where the water is discharged by a balanced float resting between the water and the reflux. The latter fills the tank full and flows by static head out of a connection in the top head and through a steam heater and discharges onto the top plate of the reflux wash section of the evaporator. The purpose of the heater is to re-evaporate the gasoline fractions contained in the reflux and heat up the oil fractions so as to minimize the cooling effect of mixing the wash and the hot oil on the top stripping plate.

The vapor leaving the mist extractor passes down to the condenser units in the cooling tower. The outflow from the condenser enters a large accumulator separator. The small amount of water condensed in the condensers is fed out by a balanced float and joins the stream of water from the reflux dewatering tank, the combined stream being measured by a flow indicator. This gives a positive check on the amount of agitation used.

The gasoline from this large accumulator is pumped by means of a 6"x4"x6" reciprocating pump (float-controlled) through the heat exchanger, steam preheater, and on to the feed plate of the stabilizer. There is also a spare pump for this service.

Unstabilized Gasoline

Tests made on the raw gasoline from the accumulator at the end of the condenser show the extreme wildness of the gasoline produced. The laboratory results are shown below. Test No. 2 was carried through normal hexane and shows a very high percentage of propane and normal butane. The vapor pressure of these samples is upward of 50 pounds and in order to make a product that is iso-butane free 30 per cent by volume must be discarded. To make a 13-pound absolute product, 75 per cent of the normal butane must be discarded; so the total discard theoretically is in the neighborhood of 50 per cent. Normal butane has a vapor pressure at 100° of 52 pounds. So it is obvious that we cannot include any great amount of this constituent when making an extremely low-pressure product.

SAMPLES OF UNSTABILIZED GASOLINE
(Percentage by volume)

	No. 1	No. 2
Methane	0.03	0.04
Ethane	2.27	1.78
Propane	17.29	16.03
Iso-butane	9.38	8.81
Normal butane	23.33	26.95
Iso-pentane	....	5.54
Normal pentane	....	12.24
Di-iso-propyl	....	1.64
Iso-hexane	....	2.99
Normal hexane	....	7.88
Residue	47.70	16.10
Total	100.00	100.00
Gravity, A.P.I.		92.2
Color		+30
Initial, °F.		41
Endpoint, °F.		292
Recovery, per cent		62.7
Vapor pressure, lbs. per sq. in. (Reid)		50.0

Distillation test on sample of representative gasoline made.

I.P.	78
10 per cent	100
20 per cent	112
30 per cent	122
40 per cent	132
50 per cent	145
60 per cent	160
70 per cent	176
80 per cent	198
90 per cent	226
Endpoint	308
Recovery, per cent	98.5
Gravity	76°
Vapor point (lbs. per sq. in.)	11.4

Gasoline of this nature, being free from all fractions lighter than normal butane, is very stable and can be handled and stored in tanks with floating roofs with very little loss.

The stabilizer column has 36 plates. It has a large reboiler in the base controlled by a recording temperature controller. The preheater is also controlled by a recording controller. The top temperature is maintained by a recording controller operating the 6"x4"x6" reciprocating reflux pump. The overhead is cooled by units in the cooling tower and discharges into a reflux accumulator equipped with a float. This float actuates a balanced valve on a hot vapor by-pass and maintains a proper level. Discard passes out through a back-pressure regulator, which maintains steady pressure. The finished gasoline is fed out of the column by a float control and cooled in the cooling tower and passes to storage. There are six of these vertical storage tanks located about 1,000 feet from the plant, each tank having a capacity of 27,000 gallons.

Analyses of Residue Gas

For comparative purposes the analyses of the dry gas is given below and accompanying is a table showing the fractional analyses of samples of the wet gas taken at different times over the past few months.

ANALYSES OF DRY GAS
(Gallons per 1,000 cubic feet)

	No. 1	No. 2	No. 3*
Iso-butane	0.023	0.02	0.01
Normal butane	0.038	0.02	0.006
Residue	0.014	0.02	0.007
Oil to gas ratio, gal./M	9	7	16

*Note—All the oil cooling coils were in use for this test, resulting in oil going to absorbers at a temperature of 58° to 60° F. Tests 1, 2, 3 and 4 were taken with over half of the oil coils cut out, giving an oil temperature of around 66° F.

These tests are interesting in that they show the effect of cold oil in varying ratios. For Test No. 3 all the oil cooling was opened up, putting the oil to the absorbers at 60°. The ratio was 16 and the stripping is quite thorough.

Analyses of Wet Gas

The analyses of the wet gas between the periods of October 21 and February 19 reveal the unusual condition of a rapidly increasing oil-gas ratio, yet practically no increase in the richness of the gas. In fact, the gas, in dropping from 60,000,000 feet to half that amount, actually decreased in content of pentane and heavier. At the present time the gas is slightly increasing in richness.

ANALYSES OF WET GAS
(Gallons per 1,000 cubic feet)

	Oct.21	Dec.24	Feb.19
Propane	0.51	0.50	0.58
Iso-butane	0.09	0.11	0.10
Normal butane	0.25	0.20	0.29
Residue	0.39	0.335	0.36
Ttl. normal butane +	0.64	0.535	0.65
Approx. volume, mm.	60	33	19

Pumphouse

The pumphouse is a steel frame, iron-clad building and houses four turbines. A 212 horsepower high-speed turbine drives the high-pressure four-stage centrifugal lean oil pump, the low-pressure single-stage fat oil pump, and the little reabsorber oil-circulating pump. There is a complete duplicate of this unit as a spare.

A 50 horsepower turbine drives three water pumps; one with a capacity of 720 gallons per minute for the hot end of the cooling tower, and the other two with a capacity of 440 gallons each for the cold end. There is also a duplicate unit as a spare. The turbines are driven by dry gas. This gas is taken off the line between the outlet Mist-D-Fier and the back-pressure regulators. It passes through a pressure reducer, which brings it down to 180 pounds. The gas to the turbines passes through a small heater which carries full boiler pressure and heats the gas to 270°. This precludes any possibility of the turbines freezing up.

Off this same 180-pound supply is the fuel gas to the boilers, which is reduced at the boiler plant to 6 pounds. Another small reducing regulator takes off of the 180-pound supply and brings a small amount of gas down to 30 pounds for the operation of all the remote controls and pilot operated valves. This last supply passes through a purifier in the pumphouse and is distributed from a three-fourths inch header down through the yard.

The cooling tower is 20'x112'x42' high, and has its basin divided into two parts by a transverse wall near the middle. There are separate spray systems for these two parts, and separate pumps. All the cooling circuits work through the tower from the hot end to the cold. Most of the heat is taken out in the hot end by evaporation off of the coils direct. The cold end can then be pretty well flooded with cold water, depending largely on direct transfer. There are no decks in the tower. The water is sprayed from the top through nozzles which give a complete coverage, and the falling water may be likened to an ejector which sweeps the tower free of steam and saturated air. There are two sets of sprays, the second set being low in the tower and for use in high winds. The Cool-R-Units are so arranged that they present practically a solid sheet of pipe to the falling water, and the velocity of the falling water is so high that practically no scale or algae can accumulate.

All the plant drainage goes into a segregating sump in the yard, and this sump is served by a 6x4x6 slops pump. The slops storage is about 400 feet to the west of the plant, as is also the 300-bbl. absorption oil storage. The make-up pump is a 6x4x6, and is alongside the slops pump, and the two are interchangeable in service.

The boiler plant consists of three 150 horsepower H.R.T. boilers equipped with water walls which considerably increase their capacity. The boiler plant is located 360 feet from the pumphouse. Separate steam headers are used for the preheaters and for the pumping service. With this system one boiler is isolated for preheater duty, and requires no make-up. The boilers are switched each two weeks to prevent the water in the preheater boiler from becoming too soft. A steel frame building houses the boilers and there is also a small steel frame building which is a combination work shop, warehouse, lavatory, office and laboratory.

RICHFIELD WRITE-OFFS EXPLAINED IN REPORT

In the Richfield audit made by Price, Waterhouse & Co., while appraisals of oil lands were made by Paul Paine, explanation of the write-offs, according to the report, is given as follows:

Additional provision for depletion and depreciation of oil lands and development, drilling tools, salvaged materials, etc., $20,234,831; additional provision for depreciation of gas plants, pipe lines, refineries, marine equipment, marketing equipment, etc., $1,739,602; writing off properties abandoned, depreciation of pipe lines, refineries, etc., and expenses erroneously capitalized, $4,613,206.

Loss on operations of New York subsidiaries in 1929, $2,405,490; additional provision for bad or doubtful accounts, $994,308; overstatement of inventories at December 31, 1929, $1,455,835; additional provision for possible loss in connection with Elk Hills litigation, $4,308,952; liabilities understated at December 31, 1929, and miscellaneous adjustments (net), $38,188.

Approximate loss on operations for period January 1, 1930, to January 14, 1931, including full provision for officers' and employes' and the Richfield Co. accounts (the Richfield Co. is a stock purchase company for employes), $16,617,403; dividends paid, $3,579,857; excess of book values over appraised values of properties, $13,430,259; total deductions, $69,417,931.

Surplus existing, according to December 31, 1929, balance sheet, amounting to $15,198,840, is thus changed to a deficit January 14, 1931, of $54,219,091.

BRITISH AMERICAN CRUDE

CHATHAM, Ontario, May 2.—British American Oil Co. of Toronto has started running crude by pipe line from the East Texas fields to the Gulf, where the crude whence will be transshipped by tankers to the company's new refinery at Montreal. Two modern light draft tankers are under construction in England for transporting this crude from Montreal to the Toronto refinery.

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Two practically new Buckeye Ditchers, with lots of spares, only been used a few months. Model 35. Two Buckeye Backfillers and one Cleveland Tamping Roller. Terms is desired. Guaranteed 98% new—for half price. M. Wenzel, 4029 S. Benton, Kansas City, Mo.

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100 OIL and gas engines for sale. Superior, Reid, Franklin, Foos, Black Bear and Primm 15 to 80 H.P. in fine order; new models, low prices. Edward A. Schambs, Jr., Box 868, Wichita Falls, Tex. Phone 6356.

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12,000 feet 4-inch, 12¾-pound external upset seamless A. P. I. tubing. Once run.
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OIL located before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay, except traveling and testing expenses, 95 per cent accuracy. O. P. Coffin, Caddo, Tex.

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OIL AND FINANCING
Wanted—Leases, royalties and production in shallow drilling areas, Oklahoma and Kansas. Must have maps, all data first letter. Name lowest price and terms. Forming large royalty and lease company. Need few more parties invest from $500 to $5,000 to become directors, form foundation. Then we have large financial house that will list our securities. Exchange raise plenty finances. Our plan safe. Will drill no wells. Address M. Wilson, 6357 Stewart Ave., Chicago, Ill., for information.

HAVE splendid drilling block near discovery well Hidalgo County, Southwest Texas. Geological and magnetometer reports on file. Well to be started immediately. Excellent possibilities. Limited portion this lease can be purchased at $25 per acre. Quick action necessary. American Petroleum Engineering Co., 1129 Fidelity Bldg., Los Angeles, Calif.

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SIZEABLE MARKETER wants to contact producer or refiner with the idea of either taking reasonable output regularly or buying outright wells, refinery, or both. Interested up to several thousand barrels daily. Box 96, Euclid Station, Des Moines, Iowa.

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YOUNG COUNTY, TEXAS
22 acres, one well making 3 bbls. daily, for quick sale $1,200.00; equipment cost $1,000.00 production 580 feet.
R. E. MOORE
GRAHAM, TEXAS.

I HAVE SEVERAL tracts near the 100 million cubic ft. Gas Well. Wire for prices. D. V. Davis, Atlanta, Texas.

TRADE on standard rig; beautiful summer home, Palacios, Tex. Matagorda Bay, wonderful fishing, bathing. For description write owner, Joe Shone, Boerne, Tex.

TOPPING Plant Operators—You can economically increase your gasoline yield. Communicate with Practical Petrolist, Box 77, Belleville, Illinois.

DRILLING Blocks, East Texas, 3,500 to 10,000 acres. Maps, geology. W. G. Singletary, 5921 Preston Road, Dallas, Texas.

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TURN TO PAGE 135 FOR ADDITIONAL CLASSIFIED ADS.

East Coast Gasoline Market Is Unsettled

Aside From Better Feeling Engendered by Reports From East Texas There Is Noticeable Absence of Constructive News

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, May 4.—Aside from the better feeling engendered by the more encouraging reports from East Texas, there was a noticeable absence of constructive news in the East Coast refined products markets during the past week. Notwithstanding more favorable weather conditions and steadily gaining gasoline consumption, the refinery market for that product continued in weak and unsettled position, and price reductions on gas and furnace oils were put into effect. On other products, posted prices are still being generally shaded in a number of instances.

Lack of export buying, coupled with overproduction of refined products during recent months, have combined to seriously undermine the statistical position of refined products markets in the East and refiners are now drastically curtailing their productive activities in an effort to bolster the market position and further diminish the oversupply of products which has so impaired the price structure during recent months.

While refiners are looking for a gradual improvement in the position of the gasoline market as the summer motoring season develops, it is now apparent that the improvement will be a slow affair, and eastern markets appear assured of a heavy supply of low priced motor fuel during the greater part of the summer season. Jobbers are not contracting with their usual sources of supply in the expected volume, and it is believed that offerings of low priced California and Gulf gasolines for delivery here during the next several months have so affected market sentiment that hand-to-mouth operations will be the order of the day during the early part of the summer season, at least, and probably for the greater part of the balance of the year.

With bunker oil prices lowered a fortnight ago, and the posted price of gas oil just reduced, the next important product in which a revision in posted price is looked for is Diesel oil. There is now a differential of 80 cents per barrel between bunker "C" and Diesel oil, and it is believed by many here that the current price of $1.75 a barrel on Diesel oil is such a tempting target for Gulf and California sellers that the East Coast refiners will be compelled to lower their quotation in order to prevent a heavy influx of Diesel oil from these sources.

Refinery Gasoline

The posted price of 6½ cents per gallon for U. S. Motor in tank car lots, refinery terminals, is still being adhered to by principal sellers, although two marketers, Continental Oil Co. and Warner-Quinlan, are posting 6⅛ cents New York. The market is far from strong, however, and 6 cents per gallon is being freely done in some quarters, with intimations that gasoline in barge lots can be bought locally at 5⅝ cents and upwards.

Demand is picking up steadily, but jobbers are reluctant to fill their storage and are in the market from day to day to cover their current requirements as they develop.

Gulf and California gasolines, in cargo lots, have been offered during the week, for delivery over the next quarter, at laid-down prices substantially under the present posted basis, and the immediate outlook remains rather bearish.

Tank Wagon Gasoline

Marketers are getting the benefit of a substantially broadened demand as a result of the warm clear weather of the past week, but competition is still keen and the price structure is not entirely stabilized at quoted levels.

Retail competition is still extremely sharp and price cutting is the order of the day in many sections of the territory. The outlook for any general price advance is unfavorable, but marketers believe that with continued fair weather they may be able to stabilize the market at posted levels, and thus lay the groundwork for a later upward revision.

Kerosene

The posted price for 41-43 water white in tank car lots is unchanged at 6 cents per gallon, but 5¾ cents represents the usual going price and gallonage is still rather light.

Tank wagon demand for kerosene is a little better, and markets note a fairly stable market, with posted quotations being adhered to in most instances.

Lubs

Spot inquiry for cylinder oils recorded a little improvement during the week, and the market was taking on a slightly better tone, although no actual price advances materialized. Compounders were in the market for oils for prompt and nearby shipment in slightly better volume, however, and traders were looking for an early substantial widening in demand, with resultant improvement in the price position.

Eastern refiners have not only been curtailing their output of cylinder oils during recent months, but have also been improving the quality of their production in many nistances, it is reported, and it is expected that some recognition of this bettered quality will be witnessed shortly in the price basis. While there are still some weak holdings of cylinder oils in eastern territory, liquidation of distressed stocks has about run its course, it is believed, and the market is expected to work back into stronger ground as trading gets back under the closer control of leading refiners.

Refiners continue to quote red and pale oils at unchanged price levels, and report a slight quickening in demand, with tank car movement slightly better than during recent weeks.

Paraffin Wax

Spotty trading continues to characterize the wax market, and volume of business, on the whole, is disappointing. Domestic buyers came into the market during the early part of the week, and considerable activity developed, but trading died off almost as quickly as it had developed. Domestic buyers, in most instances, are still adhering closely to a hand-to-mouth buying policy, and are reluctant to extend the market any buying support whatever, unless they are forced into the market for supplies for immediate requirements.

Eastern refiners are still carrying fairly sizable stocks of wax and while quoted prices represent "inside" levels on spot business, it is possible that even these low prices could be further shaded in the event that a buyer were willing to place a contract calling for large deliveries.

Export demand for wax has not come up to expectations during the past week, but a little more inquiry developed near the close of the period, and traders were looking for the closing of some fairly substantial orders in the near future.

Bunker Oil

The reduction to 95 cents per barrel in the posted price for grade "C" bunker oil at refinery terminals, announced during the preceding week, has adjusted the market to present conditions of oversupply at the Gulf, eastern refiners believe, and the market was without further change during the week under review.

Spot demand for bunker oil was holding up well, and deliveries on contract were also running into satisfactory totals. East Coast refiners are holding down their production of heavy oil, and the curtailment in imports from South America is expected to aid in stabilizing the situation in Atlantic Coast territory during the next few months.

Effective May 1, industrial fuel oil in tank car lots was reduced to 3¼ cents per gallon at New York, with distillate fuel oil cut to 4 cents per gallon.

Domestic heating oil, minimum 32 gravity, was reduced one-half cent a gallon to the basis of 4 cents in tank car lots at Bayonne refinery terminals, this reduction being effective April 30.

Diesel Oil

There has been considerable talk in trade circles regarding the possibility of a reduction in Diesel oil prices, in line with the recent cut on bunker "C" oil. No price revision developed this week, and leading refiners continue to quote $1.75 per barrel, in bulk, f.o.b. refineries. The market undertone is far from strong, however, and it is generally believed that refiners will be compelled to scale their price schedule downward in the near future. As was the case with the bunker oil market during recent weeks, it is expected that eastern refiners will stand ready to offset the threat of any heavy shipments of "outside" Diesel oil into this territory by a downward revision in the posted price at principal Atlantic Coast ports.

Production of Diesel oil in the eastern refining area is rather closely balanced with consumption, but refiners show some concern over the possibility of a substantial increase in shipments of California and Gulf Diesel oils into Atlantic Coast territory.

Gas Oil

Leading refiners announced a reduction of one-half cent to 4¾ cents per gallon in the posted price for 28 plus recycled gas oil, effective April 30. This reduction, however, did not bring the "official" quotation in line with the spot market, which still ranges 4¼ cents per gallon and up, in tank car lots at refinery terminals.

Jobbing demand for gas oil in the tank car market eased off during the week and the movement of gas oil to the large utility companies was reported to be showing a seasonal slackening, as the advent of daylight saving in the East has resulted in some lightening of the load of gas companies in this area.

Stocks of gas oil in the East, while large, are fairly well in hand, but the statistical position of the market has been adversely affected by the weakening in gas oil quotations in California and at the Gulf.

Petroleum Exports

There was a well sustained movement of refined products into export channels through the local port during the week ended April 15, substantial increases being recorded on several products, while volume on others was well maintained.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Apr. 25	Apr. 18	Apr. 11
Gasoline	330,000	195,000	675,000
Naphtha	75,000	145,000	750,000
Kerosene	15,000	140,000	195,000
Fuel oil	5,000	395,000	190,000
Lubricating oil	2,125,000	2,960,000	1,450,000
Petroleum, refined	410,000	960,000	965,000
	Pounds		
Petrolatum	200,000	12,000	200,000
Paraffin wax	2,375,000	2,165,000	1,485,000
Refined	740,000	100,000	30,000
Scale	1,320,000	430,000	585,000
Lubricating grease	850,000	750,000	950,000

According to reports in local market circles, there is still considerable interest on the part o. French refining interests in American crude, and it is expected that considerable contract business for later deliveries will be closed during the next several months. Export buying of crude, it is expected, will aid substantially in absorbing surplus East Texas production, and reports of additional salt water intrusions in that pool have tended to quicken buying interest on the part of some interests which have previously held off the market in the expectation of being in position to pick up considerable quantities of distressed crude later on.

The largest individual shipment to leave New York during the past month was a shipment of 1,215,000 gallons of lubricating oil which went out on the steamer Jeff Davis, bound for Shanghai.

Export Market

No cargo trading was reported in the Gulf market during the week and prices for both gasoline and kerosene continued nominal. Limited export activity was also reported from other quarters.

Traders are looking for the development of considerable crude oil business with France, but thus far only a little actual business of this sort has been closed, although several inquiries are reported in the market.

Refiners active in South American marketing were greatly interested in a report this week that a cargo of 40,000 cases of gasoline and 20,000 cases of kerosene had recently reached Santos from Russia, consigned to a trading company controlled by Uruguayan interests, and operating along the East Coast of South America. Russian competition in South American markets is expected to develop into a serious threat against American companies which for years have largely dominated many important South American consuming markets.

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended April 25 totaled 616,000 bbls., a daily average of 88,000 bbls., compared with 277,000 bbls., a daily average of 39,571 bbls. for the previous week, and a daily average of 56,143 bbls. for the four weeks ended April 25. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Baltimore	81,000
New York	224,000
Philadelphia	114,000
Others	77,000
Total	496,000
Daily average	70,857
At Gulf Coast Ports—	
Total	120,000
Daily average	17,143
At all United States Ports—	
Total	616,000
Daily average	88,000
Daily average four weeks	56,143

Distribution of total California oil receipts is as follows:

At Atlantic Coast Ports—	
Crude	496,000
At Gulf Coast Ports—	
Gas oil	120,000

Shipments of California refined products for Atlantic Coast ports during the week comprised the following two cargoes: 113,700 bbls. of gasoline for New York on the Tide Water (Tide Water Associated Oil Co.); and 112,200 bbls. of gasoline for New York on the Comet.

Imports

Imports of crude and refined petroleum at the principal United States ports during the week ended April 25 totaled 1,199,000 bbls., a daily average of 171,286 bbls., compared with 1,586,000 bbls., a daily average of 226,571 bbls. for the preceding week, and a daily average of

(Continued on Page 147)

Better Movement in Chicago Market

But Despite Favorable Indications Buyers Remain Cautious and Prices Continue Low on Spot Orders. Motoring Season Opened

By Robert C. Conine

CHICAGO, May 4.—Although numerous favorable indications are appearing in respect to gasoline, natural gasoline and naphtha, buyers are showing themselves unusually cautious and the prices in these markets continue low on spot orders. However, the major marketers report an improved situation in gasoline moving out on contracts, although one large marketer described the prevailing condition with the statement: "We're moving lots of gasoline and losing lots of money."

While the East Texas production is generally blamed for the condition of the markets, the increasing appearance of salt water in this oil-producing district has had no visible effect on the markets. Another fact which appears to have failed in bettering the situation is the more favorable statistical position of gasoline as compared with that which prevailed at this time last year when prices were higher. That this promises to be a season of greater demand than ever before for motor fuel is likewise not indicated in the prices.

The motoring season has just opened in Chicago after several false starts which were followed by damp and cold winds.

Material for Blending

An interesting incident of the past week was the announcement of one broker that he had motor fuel for sale at 2⅞ cents. This proposition turned out to be the selling of lots of three tank cars of material for making blended motor fuel. One cut-rate station operator who has three retail outlets in Chicago is selling at 7 cents plus 3-cent tax, or 1¼ cents below the price of the third-grade gasoline sold by the larger marketers, and reports a good business. This 7-cent motor fuel is a blend of natural gasoline and naphtha.

The 2⅞-cent price for the blending material, it is to be noted, is not for a finished product. The blending must be done by the buyer who must stand any losses through evaporation in the process. In the unlikely event that purchasers may thus obtain a butane and propane free natural gasoline, the facilities for producing the blend are not available to all buyers nor is the technique of mixing the natural gasoline and naphtha a simple matter of dumping the two together. However, when well mixed, evaporation will lower the gravity of the finished motor fuel but will not rob the mixture of its natural gasoline content.

It is of interest here to note a few refinery prices, based on Group 3: 50-52 450 endpoint naphtha ranges in price from 3⅛ to 3⅜ cents; natural gasoline, Grade A, 72-79.9, of 375 endpoint and 90 per cent recovery, 1¾ to 2 cents; Grade AA, 80-87.9 of 375 endpoint and 90 per cent recovery, 1½ to 1⅝ cents; Grade BB, 84-92, 375 endpoint and 85 per cent recovery, 1½ cents. U. S. Motor gasoline ranges in price from 3⅛ to 3½ cents. Although buyers in some quarters have asked lower prices, it is understood that 3⅛ cents is the rock bottom figure with not much available at that price.

Detroit Markets Unfavorable

The Detroit markets have been unfavorable to refiners and the past week saw some gasoline going at a price equivalent to 2⅞ cents at Tulsa, Okla., and large quantities were moved at 6⅜ cents. Refiners in this section, whose plants have a total daily crude oil capacity of 54,850 bbls. and total cracking capacity of 20,500 bbls. daily, cannot move far either east or west without meeting disastrous competition and as a result Detroit's gasoline markets will probably be the last to show any improvement.

Developments in the marketing of a third grade of gasoline by the larger companies continue to hold the center of the stage in the Chicago district. The Texas Company, which has been offering a third-grade motor fuel of purple color in St. Louis, is busily engaged in installing extra tanks and pumps in Chicago and the third-grade gasoline will be introduced here this week. The Texas Company is changing the color of this competition gasoline from purple to green. This company announces plans to introduce the green motor fuel in Detroit soon.

Phillips Petroleum Co. is selling a third grade in St. Louis but has not extended this practice to other points in the territory. Cities Service is among the latest to come into the Chicago district with a blue cheap gasoline. Another is Mid-Continent Petroleum Corp.

Price Drops 1 Cent

In St. Louis the price on the third-grade fuel dropped 1 cent to 9.9 cents Friday. This includes a 2-cent state tax and a half cent municipal tax. In Chicago the price remains at 8.25 cents plus a 3-cent tax. Price cutters are offering 8 gallons for 90 cents, or 8.25 cents plus tax, a gallon. Offers of 7 cents plus tax by blended gasoline retailers have been noted elsewhere in this article. At Wichita, Kans., where the regular grades are posted at 12.8 cents, tax included, the third-grade gasoline is below the normal 2-cent differential at 9.8 cents. In Chicago regular grades are at 14 cents, tax included. One-cent increases in the tank wagon and service station markets were made last week by Standard Oil Co. of Indiana at Des Moines and Fargo. The new prices are 14.5 cents for both markets at Des Moines, and 16.9 cents for both at Fargo.

Shell Petroleum Corp. has indicated no prospective change in its policy of keeping its regular grade of gasoline 1 cent above the price of the third-grade gasoline at all competitive points.

Opinion as to what the introduction of the third grade of gasoline will eventually lead to is divided between two well-defined camps. On one side it is contended that the use of a cheaper motor fuel for meeting competition will enable the marketers to improve their regular grades considerably. On the other side, it is held that the third grade itself will undergo substantial improvement as competition becomes keener and the price cutters work out means to meet the third grade threat, and thus the "regular" grades will lose out.

Three Grades Compared

Characteristics of the three grades offered by one marketer are given below for comparison. It will be seen that in this particular instance the move to improve the regular grade has not started. Figures at the top of each column indicate: 1, Ethyl; 2, regular grade; 3, cheap competition grade.

	1	2	3
Initial, °F.	100	102	112
20 per cent, °F.	176	194	196
50 per cent, °F.	246	278	277
90 per cent, °F.	343	382	396
Endpoint, °F.	387	414	435
Gravity	61.8	59.5	58.9
Gum, (mg.)	3	3	7
Sulphur, per cent	.07	.05	.04
Doctor	sweet	sweet	sweet
Octane No.	75	57	53

As a rule a better octane number is expected for the regular grades than 57. Brokers and jobbers report that price cutters among their clientele are becoming more insistent upon a gasoline which has a good antiknock rating. This knock rating has been the principal point at which the difference in price between trackage station gasoline and that of the regular retailers found justification. The point is quite arguable that the difference between 53 and 57 octane numbers should not amount to several cents. However, it should be remembered that a large majority of the public fail to see a difference of from 6 to 3 cents between 57 octane number and 75 octane number, although it is an undeniable fact that octane number promises to be an all-important factor.

Another of the larger companies is marketing a colored third-grade gasoline which makes a remarkably good showing on the road. In respect to knock rating a road test using an automobile of the higher compression type showed momentary trouble at the point of greatest knock and then performed satisfactorily.

Depends on Cracked Gasoline

The improvement that may be expected in the regular grades and in some of the material offered by jobbers to their cut-price customers will be largely dependent upon the availability of cracked gasoline. A popular test for determining the presence of cracked gasoline in motor fuel is the iodine absorption test. Straightrun gasoline has an iodine absorption number of from 8 to 16. However, this test is to be used with discretion as there is a wide difference in the iodine absorption numbers of different types of cracked gasoline. For instance, the iodine absorption number of liquid-phase cracked gasoline is from 80 to 110, while that of vapor phase ranges from 190 to 200. The antiknock value of a cracked gasoline, naturally, depends upon the cracking stock and upon the type of cracking process employed. In liquid-phase operation upon a charging stock from Mid-Continent crude oil, the gasoline produced should have, on an average, an octane number of 66. In vapor-phase operation the octane number of the gasoline may be anywhere between 84 and 94.

It is evident that if cracking continues to grow in popularity the consumption of crude oil will decline substantially, while kerosene, fuel oil and other similar stocks will be drawn upon.

The following procedure is carried out by one of the major companies:

Fifty per cent of a crude oil noted for its extremely poor antiknock value is taken overhead in the refining operation. Of this 50 per cent the heavier half is cracked and the resultant gasoline is blended back with the lighter half. This blend has an average octane number of 58. To this gasoline is added a cracked gasoline produced by vapor-phase process in the proportions of 35 per cent to 65 per cent of vapor phase and blend, respectively. The octane number of the finished product ranges from 66 to 70 octane number.

A straightrun gasoline from Mid-Continent crude oil, with an octane number of about 52, blended in the proportions of 60 per cent straightrun to 40 per cent vapor-phase gasoline, produces a gasoline of 70 octane number. This company markets this 70 octane number gasoline as its regular grade.

Kerosene

Kerosene has been holding at the same level for several weeks, although it is commonly known that this product is being sold in some quarters as a fuel of lower price, and is being used by a number of the smaller refiners to cut their distillates. Quotations are: On 41-43 water white, 2½ to 2¾ cents; on 42-44 water white, 2⅝ to 3 cents. As long as the gasoline markets continue low there is no expectation that kerosene will come into demand as a fuel for tractors and stationary engines.

No changes were seen last week in the fuel oil and gas oil markets which continue easy, with a number of sellers quoting lower prices.

CLASSIFIED WANTS

(Continued from Page 133)

POSITIONS WANTED

PETROLEUM CHEMIST, M. A. & B. S. in Chemical Engineering, with 11 years' experience in refining as chief chemist and as assistant superintendent and advisor capacity to sales department, wishes to secure responsible position with reliable company. Excellent references. Write Box E-408, The Oil and Gas Journal, Tulsa, Okla.

A FORMER Chicago manufacturer opening sales office in San Francisco will consider proposal from eastern manufacturers desiring Pacific Coast representation. Write Box E-477, The Oil and Gas Journal, Tulsa, Okla.

MIDDLE-AGED business man, just relieved from position on account of merger, will consider proposition from a reliable concern wanting office executive or business manager. Any legitimate line of business will be considered. Address Box E-444, The Oil and Gas Journal, Tulsa, Okla.

YOUNG man with refinery, time keeping and pay roll experience wishes permanent connection with oil company offering future in accounting. C. E. Terry, 422 S. Fredonia St., Longview, Tex.

EXPERIENCED refinery superintendent; handle design, construction, operation, sales. Write Box E-470, The Oil and Gas Journal, Tulsa, Okla.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT—Specializing in Service and Bulk Stations. Qualified to handle several projects concurrently. Can furnish best of references and will go anywhere. Write Box E-476, The Oil and Gas Journal, Tulsa, Okla.

DESIRE CONNECTION with producer who would be in a position to furnish 1,500 bbls. of high-gravity, Mid-Continent crude per day, also to take financial interest in Canadian refinery. Answer Box E-424, The Oil and Gas Journal, Tulsa, Okla.

A GRADUATE chemical and mechanical engineer thoroughly capable as refinery superintendent or manager through 10 years varied experience in refinery management with major oil company desires permanent position immediately. Write Box E-478, The Oil and Gas Journal, Tulsa, Okla.

TO REFINERS without engineering departments. A service is now made available whereby you can at all times have the services of a competent refinery engineer and drafting force. A small monthly retainer fee and the actual cost of the preparation of drawings, requisitions, etc. Will handle anything from small alterations to the building of a complete refinery. For further information write to Box E-480, The Oil and Gas Journal, Tulsa, Okla.

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SOLID WEDGE or DOUBLE DISC?

Sectional view, showing Jenkins solid wedge closing mechanism.

Sectional view, showing Jenkins Double Disc Parallel Seat closing mechanism.

Fig. 325, Jenkins Standard Iron Body Gate Valve, Screwed, with Solid Wedge, Inside Screw, Stationary Spindle.

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Jenkins Iron Body Gate Valves are supplied with inside screw and stationary spindle, or outside screw and yoke, rising spindle . . . screwed, flanged or hub ends.

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Catalogue No. 22A on pages 827 to 864 in Sweet's Engineering Catalogues

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Fire Fighters Face Great Obstacles

Mass of Material In and Near 25,000-Bbl. Burning Well in Gregg County, Texas, Slows Up Work. Nine Lives Lost

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 4.—The Sinclair Oil & Gas Co.'s No. 1 Cole in the Samuel Brooks Survey in Gregg County, a 25,000-bbl. well which caught fire on Tuesday, April 28, destroying the lives of nine workmen who were endeavoring to place the well under control, was still burning today notwithstanding the efforts of the Kinley brothers of Tulsa, famous burning well fighters.

M. M. and F. P. Kinley, who have extinguished many oil and gas fires were on the ground Wednesday with their fire-fighting materials including nitrogelatin, and the big job of extinguishing the blaze was placed in their hands. They were given a large force of workmen to assist them and the Sinclair Oil & Gas Co.'s production officials threw every safeguard around the men who worked at the peril of their lives at all times and under the most severe conditions of heat.

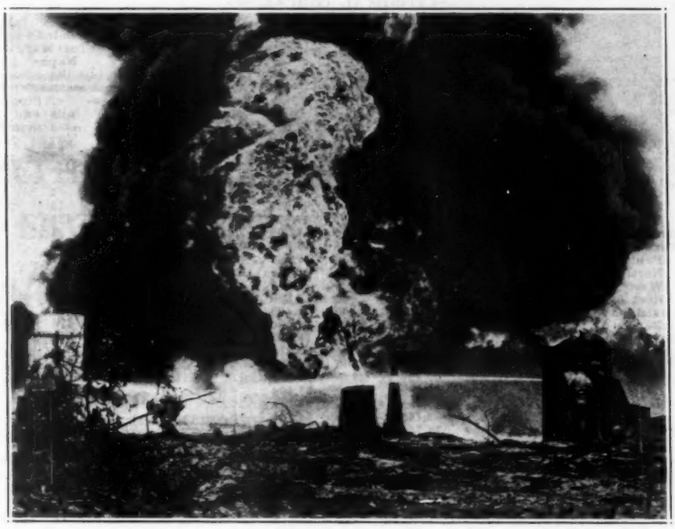
M. M. Kinley, the older of the Kinley brothers, was severely injured in the course of the work. He stumbled and a heavy chain guard fell upon one leg just above the ankle causing a fracture of the bone. Workmen rushed in and carried the injured man to safety and he was taken to Longview where the fracture was reduced, after which he returned to the well and continued to direct the work.

The two fighters agree that this was the most difficult job they have ever undertaken, due to the fact that the Kelly, gooseneck and hundreds of feet of drill pipe are in the hole, the Kelly sticking up about 20 feet above the hole, and the gooseneck pouring a steady stream of fire down towards the fighters, creating great danger, and impeding their progress. With nothing sticking out of the hole like the defying Kelly and gooseneck the job of "shooting" the well would have been simplified to merely combating the flames while the shot was placed at the top of the casing, but the Kelly must be removed before such a shot is attempted, and this was the major worry of the Kinleys and of Sinclair production officials, anxious to see the fire snuffed as soon as possible.

A 60-foot long battering ram of welded 4-inch pipe was rigged up to be swung from a welded tripod which was erected on the site, and this ram is to be used first in an effort to knock the gooseneck off or into such a position that the burning oil will spout straight up into the air, lessening the heat to some extent, and greatly lessening the danger to the two men who will take in an acetylene torch and cut off the Kelly at the top of the hole so that the shot of gelatin can be placed for detonation to snuff out the flame.

Mass of Wreckage

All machinery had to be extricated from around the hole, and dragged off, and this was the first big task. The drawworks had to be cut loose from the engine, and it was while doing this that the elder Kinley was pinned down by the falling guard. Working within 25 feet of the roaring flames, with nothing but a corrugated iron shield to ward off the furnace-like heat, and with a steady stream of water played on them continuously, the Kinley brothers worked together, hooking cables to whatever was loose and could be winched away by tractors and trucks, and cutting beams with blowtorch. Approximately two and one-half hours was consumed in cutting through the 8 by 10-inch I beams which connected the engine and drawworks, this being one of the most difficult jobs in getting out the machinery. But by Saturday noon boilers, engine, pumps and other equipment had been dragged out, and the men then directed their efforts at pulling out the drill pipe which was stacked almost directly under the flames.



Sinclair Oil & Gas Co.'s No. 1 Cole, on the Samuel Brooks Survey, Gregg County, Texas, which caught fire while flowing 25,000 bbls. a day, and destroyed the lives of nine workmen. In the picture men may be seen playing streams of water on workmen attaching cables to drill pipe and other white hot metal equipment to drag it away. The traveling block may be seen hung on top of the Kelly and gooseneck which is spouting fire down towards the ground adding to the danger and the heat under which conditions the fire fighters worked.

Tough Job of Pulling Pipe

Pulling out this pipe was another tough job due to the fact that the ground was soft and the ends of the pipe would catch, breaking the cables, and causing more hitches to be made on it to the torture of the men who were doing this extremely close-up work. Two hose played water on the men continuously, but the steaming ground, and heat made progress slow, rapidly using up the energy of the men, who rushed in and out, relieving one another and taking short rests.

It was hoped that the Kelly could be cut off Sunday morning and the shot set off early so as to give the picked crew of 12 men time in which to cap the well during the daylight hours, but all preparatory work had not been accomplished and another 24 hours had to be passed up before it could be tried. In the meantime a rig-building crew was completing a 96-foot wooden derrick on the edge of the woods, the crew working through several hours of the night by the light of the monstrous fire. This rig will be skidded over the hole when the fire is snuffed out, and the picked crew will go ahead with the "capping" job.

New Danger Threatened

Fighting the fire has its grave dangers and worries, but after the flames are shot out there will still be a great danger when the men move up to make connections on the hole to shut it in, for there will be the hazard of the oil and gas reigniting and killing many others as it did when it first blew in. In order to prevent such a reoccurrence all metal is being dragged away from the top of the hole, and for yards around it. No chances will be taken while shutting in the well, although there are plenty of chances being taken while the fighters are battling their way nearer to the Kelly, which is to be cut off by a blowtorch.

Fire-Fighting Auxiliaries

A 300 horsepower J-6 Wright airplane motor taken from the plane of Glenn Harroun, Sinclair production superintendent, was mounted on a truck and backed up to within 125 feet of the burning well to blow the heat away from the workers. The motor was kept turning at 1,300 revolutions per minute.

Another great help in combating the terrific heat was the G.M.C. fire truck the Sinclair Oil & Gas Co. sent down from Oklahoma. The water pump on this truck continued its steady drone night and day, forcing 2½-inch streams through the two lines of hose which the men behind the barriers directed at the workers nearer the flames. These streams kept the clothing of the workers thoroughly soaked, and prevented them from igniting, also helping to cool ash strewn ground from which steam arose like vapor above hot springs. Cooling the red hot metal around the flames was another job given this pump, and without the two streams pouring on this hot metal much of the time no lines could have been tied to it for "snaking" it out of the way.

Water for the pump was fed into a 1,000-bbl. steel tank which stood back 200 feet from the flames, by two 2-inch water lines which ran to the creek a half mile through the woods, where another small pump did duty in forcing the water through the lines into the tank.

Origin of Fire a Question

There are many different tales told as to the origin of this fire. Glenn Harroun, production superintendent of the Sinclair Oil & Gas Co., who on last Tuesday was standing on the derrick floor supervising the hooking up and shutting in of the well, and facing his brother William across the top of the casing, says that the first glimpse he had of flames was down in the cellar. He shouted to everyone to run, doing the same himself. But it was so unexpected and the explosion so great that the men working on the leeside of the platform were immediately covered with burning oil. Young William Harroun was one of these men. His body has not yet been recovered. Robert Murdock's body was

(Continued on Page 149)

Left to right: H. W. Bogges, superintendent for safety for the Sinclair Oil & Gas Co.; M. M. Kinley, Tulsa, veteran well shooter and extinguisher of oil and gas well fires; and Glenn Harroun, superintendent for the Sinclair Oil & Gas Co., all of whom have played important parts in the work of fighting the oil fire.

A 300-horsepower J-6 Wright airplane motor taken from the plane of Glenn Harroun, production superintendent for the Sinclair Oil & Gas Co., which was mounted on a truck and backed up to within 125 feet of the flames to blow the heat away from the workmen. The motor is turning 1,300 revolutions per minute.

Manufacture of Natural Gasoline

Super-Stabilization And Blending Used To Support Market

Low prices and the appearance on the spot market of excess material at all times over the past month have caused natural gasoline manufacturers to seek new means of expanding sales and economically cut production. Refiners who have been consistent purchasers of natural gasoline have decreased their takings to minimize cash outlays and in the case of the Gulf companies, the Sinclair companies and the Standard Oil Co. of New Jersey, three refining companies, which in the past have been using large quantities of natural in addition to that supplied from their subsidiaries, have been offering some of their own material on the open market to further aggravate the oversupply. While the offerings of these companies are now much below what they were a month ago, and it is believed that the Gypsy Oil Co. will now remain out of the market, there still is enough excess material offered to hold prices to the lowest point in the history of the industry.

To counteract this, manufacturers are going to superstabilization. This practice is decreasing production from 25 to 30 per cent in those plants formerly making the AA grade. The new product is made to a specified recovery or Reid vapor pressure. A large order now being filled calls for a 96 recovery. Not many months ago this would have been considered an unreasonable specification for the ordinary run of natural gasoline. Now the manufacturer finds himself obligated to make just about what the market demands.

At present two large plants of the Carter Oil Co. have been ordered to stabilize their production to 11 pounds vapor pressure. Other plants will be placed on this schedule of operations as soon as needed. Other companies are adopting a similar schedule but in most cases, are going only to 20 pounds vapor pressure and making a 90 to 95 recovery product.

Another means a few manufacturers are adopting to move their production is to act as a buyer of refinery naphtha and a seller of a blended motor fuel instead of attempting to compete in the sale of their natural gasoline as such. One large manufacturer who has been supplying a nearby refinery with natural gasoline and delivering it to the plant by pipe line has made an agreement whereby a separate tank is set aside for the natural gasoline manufacturers use. The refiner runs a certain amount of his naphtha production to this tank and then natural is delivered and blended with it to make a motor fuel. The proportion of natural in this material will run as high as 40 per cent.

This can only be done where the delivery cost on the natural is low, which in this case is almost negligible. A heavy 437 endpoint naphtha may be purchased under such an arrangement for 3 cents or less and the natural gasoline manufacturer feels that if he is able to blend up to 40 per cent of his product into the finished motor fuel and sell it for 3 cents, he has made the difference between 1½ cents and 3 cents on the natural he supplied in the deal. His next problem is to sell the blend but this has been found possible through trackage stations and scattered small independent stations seeking a high gravity blend.

In this manner the natural gasoline manufacturer has become a competitor of the refiner who has ceased to take the natural gasoline manufacturers' production. This turn has been justified on this basis. This condition is expected to right itself as soon as refiners again enter the market on a normal scale of buying and it is believed that it will be automatically stopped when the margin between the refinery gasoline price and the natural gasoline price is reduced to a normal range.

One fact which has shown up strongly in the past two months is the support given the idea of stabilizing and in effect, this is an indication that refiners in turn are using the new table of natural gasoline specifications as a basis for their demands. As one manufacturer said: "We might now be passing through a period which will force beneficial changes which, under normal conditions, would not have come about and in another year we can expect to be on a much better footing from which to maintain market stability."

NATURAL GASOLINE STOCKS SHOW LARGE INCREASE END OF MARCH

The steady decline in production of natural gasoline, which began in December, 1930, was interrupted in March, when the production amounted to 170,000,000 gallons, or a daily average of 5,480,000 gallons, according to the Bureau of Mines, as compared with a daily average of 5,450,000 gallons in February and with an average of 6,200,000 gallons for March of last year. Practically all of the producing districts reported a gain in output in March.

Stocks of natural gasoline continued to increase and on March 31 amounted to 37,115,000 gallons. This compares with stocks of 29,079,000 gallons on hand at the first of the month and with 28,281,000 gallons on hand a year ago. California and Oklahoma were the principal states in accounting for the larger production.

STATISTICAL COMPARISON

(Thousands of gallons)

	Natural gasoline: Production				Natural gasoline: Stocks end of month		Blended motor fuel Mar., '31: Natural gasoline used	Blended motor fuel Mar., '31: Naphtha or other oils used	Blended motor fuel Mar., '31: Stocks end of month
	Mar., 1931	Feb., 1931	Mar., 1930	Jan.-Mar., 1931	Mar., 1931	Feb., 1931			
Appalachian	3,400	7,600	9,800	24,900	5,608	4,761	69	82	223
Ill., Ky., etc.	1,000	1,000	1,300	3,100	565	546	..	..	..
Oklahoma	42,700	38,900	52,500	125,700	12,399	10,476	141	132	126
Oklahoma City	4,400	3,300	2,200	11,200	2,742	2,001	..	..	..
Osage County	5,900	5,400	6,800	18,700	2,300	2,129	5	2	4
Seminole, etc.	17,400	15,300	24,200	49,000	2,931	2,685	22	10	23
Rest of State	16,000	14,900	20,300	46,800	4,376	3,661	114	120	93
Kansas	2,900	2,600	2,800	8,200	2,336	1,617	2	1	6
Texas	39,400	36,700	40,200	116,900	10,876	7,380	119	252	78
Panhandle	18,400	17,500	20,300	55,600	4,696	3,122	46	64	32
North Texas	3,600	3,500	3,900	11,000	1,225	776	3	2	6
West Central	11,500	10,600	12,400	34,000	3,296	2,690	65	182	36
Rest of State	5,900	5,100	3,600	16,300	1,659	792	5	4	4
Louisiana	4,900	4,700	7,500	14,400	1,016	866	28	15	12
Arkansas	2,600	2,400	2,700	7,600	243	233	211	176	16
Rocky Mountains	5,300	4,800	4,400	15,800	952	745	..	..	..
California	61,800	53,800	76,000	179,800	3,080	2,395	..	..	..
Huntington Beach	2,000	1,700	2,800	5,700	....	....	..	..	..
Kettleman Hills	14,600	11,800	9,800	42,700	..	....	..	..	..
Long Beach	12,400	12,300	14,800	39,400	....	....	..	..	..
Santa Fe Springs	11,200	9,900	21,400	33,200	....	..	..	..	..
Ventura Avenue	5,100	4,400	4,800	14,300	....	....	..	..	..
Rest of State	15,500	13,700	16,400	44,500	....	....	..	..	..
Total	170,000	152,500	192,200	496,400	37,115	29,079	570	658	456
Daily average	5,480	5,450	6,200	5,520	....	....	18	21	..
Ttl. (thousands of bbls.)	4,048	3,631	4,576	11,819	884	692	14	16	11
Daily average	131	130	148	131	....	....	..	..	..

SHUT DOWN PICO CANYON UNIT

NEWHALL, Calif., May 2.—The Standard Oil Co. of California has closed down its natural gasoline plant at Pico Canyon. This was a small unit and the cause for discontinuing operations was given as due to the low prices for the products.

HIGH HELIUM OUTPUT

AMARILLO, Tex., May 5.—The Government's helium plant, located in the Panhandle Field, set a record for the production of the valuable helium gas when it produced 1,297,000 feet of gas of 98 per cent purity, during a 31-day period.

UNION OIL TO MARKET LIQUEFIED FUEL GASES

The Union Oil Co. of California will market liquefied gases in tank wagon and tank car lots according to a recent announcement.

The company has just completed a new stabilization plant at its Los Angeles refinery which is capable of producing 30,000 gallons of the liquid fuel daily.

Although a few concerns have been marketing the fuel in small containers for some time, wholesale distribution is a relatively new undertaking. For the present Union will sell its liquid gas largely to gas companies that are using it for enrichment or replacement of manufactured oil-gas in pipe systems in small towns; retail distributors, who purchase in wholesale quantities, and large industrial users.

DIRIGIBLE USES PROPANE

Liquefied gas will serve as the fuel for cooking meals aboard the giant dirigible Akron ZRS 4 now under construction for the Navy at Akron, Ohio. Enough propane will be carried to supply fuel for 12 days. This type of equipment was chosen because of its light weight and engineers specified 110 pounds as the maximum to be allowed for the stoves.

The normal crew is composed of 50 men and the immensity of the dirigible may be seen in a few over-all measurements. The length is 785 feet and the diameter of the bag is 132 feet. It has a cruising radius of 14,000 miles at a speed of 83 miles per hour.

Slight Increase in Production of West Coast Field Plants

One hundred thirty-one natural gasoline plants in California with a daily indicated capacity of 2,660,049,000 feet, report a recovery of 61,764,854 gallons of natural gasoline from 42,080,130,000 feet of gas treated in March. This is an increase of 1,714 bbls. in daily average production.

Utilization of natural gasoline, including shipments, amounted to 1,324,638 bbls., a decrease under February of 206,220 bbls. Daily average utilization of 42,730 bbls. was 4,708 bbls. less than daily average production of 47,438 bbls.

Stocks of natural gasoline at the end of March amounted to 1,543,805 bbls. of which 73,338 bbls. were reported by natural gasoline plant operators and 1,470,467 bbls. by refinery operators. This is an increase of 145,954 bbls. over February stocks. This stock figure of 1,543,805 bbls. is approximately 36 days' supply at the current rate of consumption.

As has been the case for several months the Kettleman Hills Field leads all other areas in production with a total of 14,559,849 gallons for the month. The Long Beach area is second with 13,442,426 gallons and Santa Fe Springs, third with 11,235,208 gallons. These three areas have approximately 65 per cent of the State's total.

In February all fields produced 53,800,000 gallons the lesser production shown being due to the short month, the daily average remaining about the same. The Kettleman Hills Field showed the largest increase, the output in February amounting to 11,800,000 gallons, an increase in March of about 2,800,000 gallons.

There has been a decide slowing up in the building of new plants throughout the California fields and in some instances, the smaller and less efficient plants are being closed down.

CALIFORNIA NATURAL GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS, MARCH, 1931

Production by Fields

	Gas treated (M.C.F.)	Natural gasoline produced (gallons)
Fullerton and Whittier	818,264	1,873,432
Midway	1,921,848	3,458,449
Huntington Beach	632,656	2,011,778
Kettleman Hills	11,988,855	14,559,849
Long Beach	6,958,673	13,442,426
Richfield	481,025	641,964
Santa Fe Springs	7,535,898	11,235,208
Seal Beach	819,366	1,343,518
Ventura Avenue	5,333,364	5,070,239
All other fields	5,590,181	8,157,991
Total	42,080,130	61,764,854

Production by Methods

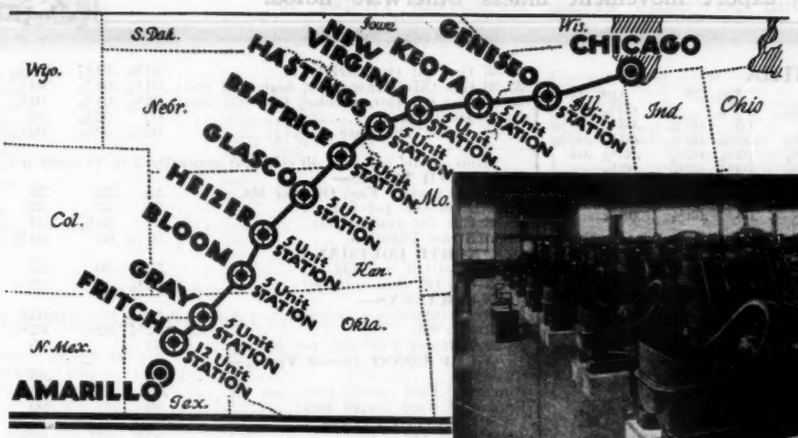
Type of plant—	Gas treated (M.C.F.)	Natural gasoline produced (gallons)
Oil absorption	41,901,715	61,551,991
Compressor	178,414	212,863
Total	42,080,130	61,764,854
Finished gasoline at plants, bbls.		15,158

Distribution

	Bbls.	Bbls.
Stocks first of month		1,397,851
Produced during month		1,470,592
Quantity mixed with crude or unfinished oils	72,367	
Used in blending at refineries	954,532	
Shipments	231,711	
Stocks end of month	1,543,805	
Balance*	65,527	
Total	2,868,443	2,868,443

*Includes evaporation losses, purchase by jobbers for blending, etc.

Stocks	Gallons	Bbls.
Natural gasoline held by natural gasoline plant operators	3,080,208	73,338
Natural gasoline held by refineries	61,759,614	1,470,467
Total	64,839,822	1,543,805



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The selection of Worthington equipment for this line is a significant recognition of the reliable service which similar Worthington units have rendered on other lines during the past thirty years. This tribute to Worthington design and Worthington performance records speaks for itself.

It has been a privilege to work with the engineers and executives of the Continental Construction Corporation in the development of this interesting and important project.

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DIESEL ENGINES	AUTOMATIC HEAT TREATING MACHINES FOR DRILL STEEL
GAS ENGINES	FORGING FURNACES FOR DRILL STEEL
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EGR-11

WORTHINGTON

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	May 5		Apr. 28		Apr. 21	
50-52 450 endpoint	.02⅞	.03⅛	.03⅛		.03¼	
56-58 450 endpoint	.02⅞	.03	.03	.03¼	.03⅛	.03¼
58-60 437 endpoint (U. S. Motor)	.03	.03½	.03⅛	.03⅝	.03¼	.03¾
60-62 437 endpoint	.03⅛	.03½	.03¼	.03⅝	.03½	.04
60-62 400 endpoint	.03¼	.03½	.03⅜	.03½	.03½	
64-66 375 endpoint	.03⅜	.04	.03¾	.04	.04	
68-70 360 endpoint	.03⅜	.04	.04	.04⅛	.04⅛	
64-66 437 endpoint (blend)	.02⅞	.03	.03	.03¼	.03¼	
NORTH TEXAS—						
50-52 450 endpoint	.02⅞	.03	.03⅛		.03¼	
58-60 450 endpoint	.02⅞	.03	.03		.03⅛	
58-60 437 endpoint (U. S. Motor)	.03	.03⅛	.03⅛	.03¼	.03¼	.03½
60-62 400 endpoint	.03¼	.03½	.03¼	.03½	.03½	.03⅝
64-66 390 endpoint	.03⅜	.03¾	.03½	.03¾	.03⅝	.03¾
64-66 375 endpoint	.03½	.04	.03⅝	.04	.04	
68-70 360 endpoint	.03¾	.04	.03⅞	.04⅛	.04⅛	
64-66 437 endpoint (blend)	.02⅞	.03	.03	.03¼	.03¼	.03½
*NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.03½	.03¾	.03⅝	.03⅞	.03¾	.04
*ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.03½	.03¾	.03⅝	.03¾	.03⅝	.04
PENNSYLVANIA—						
52-54 Naphtha	.05		.05		.05	
54-56 Naphtha	.05		.05		.05	.05½
58-60 Gasoline	.05¼		.05¼		.05¼	.05½
60 Gasoline	.05¼	.05½	.05¼	.05½	.05¼	.05¾
62 Gasoline	.05½		.05½		.05½	.05¾
64 Gasoline	.06		.06		.06	
68-70 350 endpoint gasoline	.06¼		.06½		.06½	
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.03	.03½	.03	.03½	.03	.03½
†58-60 400 endpoint domestic gasoline	.04	.04½	.04	.04½	.04½	.05
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha	.03⅛	.03⅜	.03	.03¼	.03	.03¼
58-60 437 endpoint (U. S. Motor)	.03⅛	.03½	.03⅛	.03⅜	.03¼	.03½
60-62 400 endpoint	.03¼	.03⅝	.03¼	.03½	.03½	.03⅝
64-66 375 endpoint	.03⅜	.04	.03¾	.04	.03¾	.04
64-66 437 endpoint (blend)	.03	.03⅛	.03	.03⅛	.03¼	
68-70 360 endpoint	.04	.04⅛	.04	.04⅛	.04	.04¼
GULF COAST (Export)—						
58-60 U. S. Motor	.04½		.04½		.04½	
60-62 400 endpoint	.04¾		.04¾		.04¾	.05
61-63 390 endpoint	.05¼		.05¼		.05¼	
64-66 375 endpoint	.05½		.05½		.05½	

*Louisiana, Arkansas, Mississippi and East Texas delivery. †For local consumption.

NATURAL GASOLINE

OKLAHOMA (Group 3)—	May 5		Apr. 28		Apr. 21	
Grade A, 72-79.9, 375 e.p., rec. 90%	.01¾		.01¾	.02	.02	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01½	.01⅝	.01½	.01⅝	.01⅝	.01¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.01½		.01½		.01⅝	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01½		.01⅝	
Grade C, 80-92, 375 e.p., rec. 78%	.01⅜	.01½	.01⅜	.01½	.01½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.01⅜		.01¾	.02	.02	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01½	.01⅝	.01½	.01⅝	.01⅝	
Grade B, 76-83.9, 375 e.p., rec. 85%	.01½		.01½		.01⅝	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01½		.01⅝	
Grade C, 80-92, 375 e.p., rec. 78%	.01½		.01½		.01½	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.01¾	.02	.01¾	.02	.02⅛	
Grade BB, 84-92, 375 e.p., rec. 85%	.01⅝	.01¾	.01⅝	.01¾	.01⅝	.01¾
Grade C, 80-92, 375 e.p., rec. 78%	.01⅝		.01⅝		.01¾	
CALIFORNIA—						
75-78 375-390 endpoint	.02½	.03	.02½	.03	.03	.04
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.01¾		.01¾	.02	.02	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01½		.01½	.01⅝	.01⅝	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01½		.01⅝	

BURNING OIL

OKLAHOMA (Group 3)—	May 5		Apr. 28		Apr. 21	
41-43 water white kerosene	.02½	.02⅝	.02½	.02¾	.02½	.02¾
42-44 water white kerosene	.02⅝	.03	.02¾	.03	.02¾	.03
NORTH TEXAS—						
41-43 water white kerosene	.02⅜	.02½	.02½	.02¾	.02½	.02¾
40-41 water white kerosene	.02¼	.02½	.02¼	.02½	.02¼	.02½
*NORTH LOUISIANA—						
41-43 water white kerosene	.03		.03		.03	
*ARKANSAS—						
41-43 water white kerosene	.03		.03	.03⅛	.03	.03⅛
PENNSYLVANIA—						
43 Kerosene prime white	.04⅜		.04⅜		.04½	
45 Kerosene water white	.04⅜		.04⅜	.04½	.04½	
46 Kerosene water white	.04⅝	.04¾	.04⅝	.05	.04⅝	.05
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04	.04½	.04	.04½	.04	.04½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.02½	.02¾	.02½	.02¾	.02½	.02¾
42-44 water white kerosene	.02⅝	.03	.02⅝	.03	.02¾	.03
GULF COAST (Export)—						
41-43 prime white	.04¼		.04¼		.04¼	
44 water white	.05¼		.05¼		.05¼	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

OKLAHOMA (Group 3)—	May 5		Apr. 28		Apr. 21	
Below 18 gravity Fuel Oil, per bbl.	.35	.40	.35	.40	.35	.40
18-22 Fuel Oil, per bbl.	.37½	.42½	.37½	.42½	.37½	.42½
20-22 Fuel Oil, per bbl.	.40	.45	.40	.45	.40	.45
22-26 Fuel Oil, per bbl.	.45	.50	.45	.50	.45	.50
24-26 Fuel Oil, per bbl.	.47½	.50	.47½	.50	.47½	.50
26-30 Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.55
28-30 Fuel Oil, per bbl.	.55	.65	.55	.65	.55	.65
32-36 Gas Oil (industrial)	.01⅛	.01¼	.01⅛	.01¼	.01¼	
32-36 Gas Oil (straw color, high cold test)	.01⅛	.01⅜	.01⅛	.01⅜	.01¼	.01⅜
32-36 Gas Oil (straw color, low cold test)	.01½	.01⅝	.01½	.01⅝	.01½	.01⅝
36-38 Distillate	.02	.02¼	.02	.02¼	.02	.02¼
38-40 Straw Distillate	.02⅛	.02¼	.02⅛	.02¼	.02¼	

Note—Fuel oils over 40 cold test generally 5 to 10 cents per barrel less.

NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.25	.35	.25	.35	.30	.35
24-26 Fuel Oil, per bbl.	.35	.45	.35	.45	.40	.45
32-36 Gas Oil (industrial)	.01	.01¼	.01	.01¼	.01⅛	.01¼
38-40 Straw Distillate	.01⅞	.02	.01⅞	.02	.02	.02¼
*NORTH LOUISIANA—						
18-20 Fuel Oil, per bbl.	.55	.60	.55	.60	.55	.60
30-32 Gas Oil (low cold test)	.02¼		.02¼		.02¼	
*ARKANSAS—						
33-36 Distillate	.02½		.02½		.02½	
30-32 Gas Oil	.02⅞	.02¼	.02⅞	.02¼	.02⅛	.02¼
16-22 Refinery Fuel Oil, per bbl.	.55		.55		.55	
GULF COAST (South Texas)—						
Gas Oil	.03		.03		.03	
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.65	.70
Bunker C Fuel (small lots)	.80		.90		.90	
PENNSYLVANIA—						
30-34 Fuel Oil	.02¾	.02⅞	.02¾	.02⅞	.02¾	
36-40 Fuel Oil	.02⅞	.03	.02¾	.03	.02⅞	.03
CALIFORNIA—						
33-36 Distillate	.02	.02½	.02	.02½	.02	.02½
26-32 Distillate	.01¾	.02	.01¾	.02	.01¾	.02
15-19 Fuel Oil, Bunker (at tidewater), bbl.	.60	.90	.60	.90	.60	.90
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.55	.85	.55	.85	.55	.85
†15-19 Fuel Oil, f.o.b. tank cars	.30	.70	.30	.70	.30	.70
27 plus Diesel, per bbl.	.70	.95	.70	.95	.70	.95
30-34 Gas Oil	.70	.95	.70	.95	.70	95
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.35	.40	.35	.40	.35	.40
22-26 Fuel Oil, per bbl.	.37½	.42½	.37½	.42½	.47½	.55
28-30 Fuel Oil, per bbl. (zero)	.60	.70	.60	.70	.60	.70
32-36 Gas Oil (industrial)	.01⅛	.01⅜	.01⅛	.01⅜	.01⅛	.01¼
32-36 Gas Oil (zero)	.01½	.01¾	.01½	.01¾	.02	.02¼
38-40 Straw Distillate	.02⅛	.02¼	.02⅛	.02¼	.02¼	.02⅜

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	May 5		Apr. 28		Apr. 21	
100 vis., 2 color, 20-25 cold test	.05		.05		.05	
100 vis., 3 color, 20-25 cold test	.04¾	.05	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.07		.07		.07	
150 vis., 4 color, 20-25 cold test	.06½		.06½		.06½	
180 vis., 3 color, 23-28 cold test	.08½		.08½		.08½	
180 vis., 4 color, 23-28 cold test	.08		.08		.08	
180 vis., 5 color, 23-28 cold test	.07¼	.07½	.07¼	.07½	.07¼	.07½
200 vis., 3 color, 23-28 cold test	.09½	.10	.09½	.10	.09½	.10
200 vis., 4 color, 23-28 cold test	.09½		.09½		.09½	
200 vis., 5 color, 23-28 cold test	.08½	.09	.08½	.09	.08½	.09
240 vis., 3 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 4 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
240 vis., 5 color, 25-30 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
280 vis., 4 color, 25-30 cold test	.15½		.15½		.15½	
280 vis., 4 color, 25-30 cold test	.14½		.14½		.14½	
280 vis., 5 color, 25-30 cold test	.13½		.13½		.13½	
Cylinder Stocks:						
600, steam refined, light green	.05	.06	.05	.06	.05	.06
600, steam refined, dark green	.03½	.04½	.03½	.04½	.03½	.04½
190-200 vis., D color, Bright Stocks	.20		.20		.20	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.16	.17	.16	.17	.16	.17
150-160 vis., D color, Bright Stocks 10-25 c.t.	.15	.16	.15	.16	.15	.16
150-160 vis., D color, Bright Stocks 25-40 c.t.	.14½	.15½	.14½	.15½	.14½	.15½
150-160 vis., E color, Bright Stocks	.14	.15	.14	.15	.14	.15
Waxes:						
124-126 White Crude Scale Wax	.01¾	.02	.01¾	.02	.01¾	.02

All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.05½	.06	.05¼		.05½	
34 Sundebloom	.05¼		.05¼		.05½	
36 Miners' Neutral	.05½		.05½		.05½	
150, 3 color	.16¾	.17	.16¾	.17	.17½	.18
180, 3 color	.18½	.19½	.18½	.20½	.19	.20
200, 3 color	.21½	.22	.21½	.22½	.22	.22¼
220, 3 color	.24	.26½	.24½	.26½	.24½	.27
600, steam refined	.08¼	.08½	.08¼	.08½	.08¼	.08¾
650, steam refined	.11	.12	.11	.12½	.11½	.12
600, Pennsylvania Flash	.12	.14	.12	.14	.12	14
630, Pennsylvania Flash	.17¾		.17¾		.18	
600, E filtered	.11½	.12½	.11½	.13	.11½	.12½
600, D filtered, Oil City	.15	.17	.17		.17	
Pennsylvania Bright Stocks below 35 c.t.	.18		.18	.19	.18	.18½
Pennsylvania Bright Stocks above 35 c.t.	.17½	.18	.17½		.17¾	
*122-124 White Crude Scale Wax	.02	.02⅛	.02⅛	.02¼	.02¼	.02¼
124-126 White Crude Scale Wax	.02⅛		.02¼		.02¼	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.06	.06¼	.06	.06¼	.06	.06¼
200 vis., 3 color, pale oil	.08¼	.08½	.08¼	.08½	.08¼	.08½
300 vis., 3 color, pale oil	.09½	.09¾	.09½	.09¾	.09½	.09¾
500 vis., 3½ color, pale oil	.10¾	.11	.10¾	.11	.10¾	.11
750 vis., 3½ color, pale oil	.12¼	.12½	.12¼	.12½	.12¼	.12½
1,200 vis., 3½ color, pale oil	.14¾	.15	.14¾	.15	.14¾	.15
2,000 vis., 4 color, pale oil	.15¾	.16	.15¾	.16	.15¾	.16
200 vis., 5-6 color, red oil	.07½	.07¾	.07½	.07¾	.07½	.07¾
300 vis., 5-6 color, red oil	.08¾	.09	.08¾	.09	.08¾	.09
500 vis., 5-6 color, red oil	.10	.10¼	.10	.10¼	.10	.10¼
750 vis., 5-6 color, red oil	.11	.11¾	.11	.11¾	.11	.11¾
1,200 vis., 5-6 color, red oil	.13¾	.14	.13¾	.14	.13¾	.14
2,000 vis., 6 plus color	.15¾	.16	.15¾	.16	.15¾	.16

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

CALIFORNIA—						
130 vis., 2½-3 color	.09	.09½	.09	.09½	.09	.09½
200 vis., 2½-3 color	.10	.10¾	.10	.10¾	.10	.10¾
300 vis., 3-3½ color	.10¾	.11½	.10¾	.11½	.10¾	.11½
350 vis., 3½-4 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
400 vis., 3½-4 color	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
400 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
500 vis., 5-6½ color	.12	.12¾	.12	.12¾	.12	.12¾
600 vis., 6½ plus color	.13	.14	.13	.14	.13	.14

Note—Bright Stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	May 5		Apr. 28		Apr. 21	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.06	.06½	.06⅜	.07½	.06⅜	.07½
Kerosene, water white, 41-43	.05¾	.06	.05¾	.06	.05¾	.06
*Fuel Oil, Bunker "C," 41-43	.95		.95		1.05	
†Fuel Oil, Diesel, 28-30, per bbl.	1.65		1.75		1.75	
Gas Oil, 28 gravity plus	.04¼	.04¾	.4¼	.05¼	.04¼	.05¼
25 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
280 red Paraffin Oil, tank car	.12½		.12½		.12½	
250 red Paraffin Oil, tank car	.11½		.11½		.11½	
225 red Paraffin Oil, tank car	.10		.10		.10	
200 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04		.04½		.04½	
Refined Wax:						
120-122 a.m.p., per lb.	.03		.03		.03	
125-127 a.m.p., per lb.	.03½		.03½		.03½	
130-132 a.m.p., per lb.	.03⅝		.03⅝		.03⅝	
133-135 a.m.p., per lb.	.04¼		.04¼		.04¼	
135-137 a.m.p., per lb.	.04⅝		.04⅝		.04⅝	
Petrolatum in barrels in carload lots, per pound:						
Dark Green	.01¾		.01¾		.01¾	
Amber	.03		.03		.03	
Extra Amber	.03¼		.03¼		.03¼	
Cream	.06		.06		.06	
Lily White	.06¾		.06¾		.06¾	
Snow White	.08		.08		.08	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents a barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	May 5		Apr. 28		Apr. 21	
600, steam refined cylinder stocks, in bbls.	.16	.16¼	.16	.16¼	.16¼	
635, steam refined	.16½	.17	.16½	.17	.17	
650, steam refined	.19½	.20	.19½	.20	.20	
600, Pennsylvania Flash	.20	.21	.20	.21	.20	.21
630, Pennsylvania Flash	.26		.26		.26	
600, Warren E	.20		.20		.20	
600, Oil City E	.19		.19		.19	
Light 140-150 Bright Stocks	.25	.26	.25	.26	.26½	
Dark 140-150 Bright Stocks	.23½	.24	.23½	.24	.24½	

LOS ANGELES EXPORT PRICES

	May 5		Apr. 28		Apr. 21	
Kerosene, water white	.04	.04½	.04¼	.05	.04½	.05½
*U. S. Motor Gasoline, 53-55, 437 e.p.	.03½	.04½	.03½	.04¼	.04	.04¾
*58-62, 400 endpoint gasoline	.04	.04½	.04	.05	.04½	.05½

*For coastwise shipment.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Rusk County, Tex.* (Apr. 6, 1931) ....$ .25
Corsicana heavy (Apr. 23, 1931)†..... .38
Other fields .....See gravity table

*Posted by Panola Pipe Line Co. For Humble Oil & Refining Co. and Magnolia Petroleum Co. posted prices on East Texas, see gravity table. †Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties..See gravity table

WEST TEXAS

Iatan* .....Same as North Texas
Crane-Upton-Crockett, Howard and Glasscock and Ector (Apr. 21, 1931)†..$ .30
Winkler and Pecos, Tex. (Apr. 21, 1931)† .35
Lea County, N. Mex. (Apr. 21, 1931) .. .325

*Includes Westbrook Field. †Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover (all grades) (Mar. 10, 1931)..$ .45
Carterville, Sarepta and Cotton Valley, below 36 gravity .....See gravity table
March 10, 1931 45
Urania (Oct. 30, 1930) 75
Calion, heavy (Mar. 10, 1931) 45
East El Dorado (Mar. 10, 1931) 45
Other fields .....See gravity table

Note—Smackover and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado posted by Gulf Refining Co. and Magnolia Petroleum Co.; Calion posted by Gulf Refining Co.

GULF COAST

Grade A (April 21)* .....$ .70
Grade B, 25° and upward—See gravity table
Jennings, La. (Apr. 21, 1931)† ..... .75
Refugio, light .....Same as Grade B
Refugio, heavy (Jan. 14)* ..... .69
Markham (Mar. 10, 1931)‡ ..... .50
High Island (Apr. 21, 1931)† ..... .65
Hankamer (Apr. 21, 1931)† ..... .65

*Humble Oil & Refining Co. †Gulf Refining Co. of Louisiana. ‡Texas Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Iles (Mar. 7, 1931):
33 gravity and above .....$ .72
Under 33 gravity ..... .50
Fort Collins (Mar. 5, 1931) ..... .58
Florence (Mar. 5, 1931) ..... .47
Wellington (Mar. 5, 1931) ..... .48
Dutton Creek (Oct. 28, 1930) 1.01
Rock Creek, Wyo. (Mar. 5, 1931) ..... .66
Salt Creek .....See gravity table
Big Muddy (Mar. 5, 1931) ..... .65
Grass Creek, heavy (July 27, 1928) ..... .90
Grass Creek, light (Mar. 5, 1931) ..... .90
Elk Basin (Mar. 5, 1931) ..... .90
Lance Creek (Mar. 5, 1931) ..... .98
Poison Spider (Mar. 5, 1931) ..... .70
Notches (Mar. 14, 1927) ..... .65
Hudson (Mar. 5, 1931) ..... .35
Lander (Mar. 5, 1931) ..... .90
Rex Lake (Feb. 22, 1930) 1.10
Osage (Apr. 15, 1931) ..... .93
Lost Soldier (Mar. 5, 1931) ..... .55
Hamilton Dome (Mar. 14, 1927) ..... .85
Greybull (Oct. 28, 1930) 1.25
Torchlight (Oct. 28, 1930) 1.25
Cat Creek (Mar. 5, 1931) ..... .90
Pondera (Mont.) (Mar. 12, 1931) 1.00
Sunburst (Mont. (Mar. 12, 1931) 1.10
Hogback (N. Mex.) (Mar. 5, 1931) 1.05
Artesia (N. Mex.) (Mar. 10, 1931) .... .40
Lea County, N. Mex. (Apr. 21, 1931) .. .325
Border, Mont. 1.55
Red Coulee, Alberta 1.55

Note—Salt Creek, Cat Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by the Continental Oil Co. Osage posted by Arro Oil & Refining Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (Apr. 21, 1931)* .....$ .53
Luling (Apr. 23, 1931)† ..... .38
Mirando (Apr. 21, 1931)* ..... .60
Pettus (Apr. 21, 1931)* ..... .75
Salt Flat (Apr. 21, 1931)* ..... .53
Thrall‡ .....
Lytton Springs (Lockhart) See gravity table
Dobrowolski (Oct. 25, 1930)‖ .....
Same as Mid-Continent gravity scale up to and including 38-38.9° at 1.01
Somerset (Oct. 25, 1929)¶ .....
Same as Mid-Continent gravity scale up to and including 38-38.9° at 1.01

*Posted by Humble Oil & Refining Co. †Magnolia Petroleum Co. ‡Thrall prices same as North Central Texas less 1½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective April 23, 1931)

Penna Grade Oil in National Transit Lines (Pennsylvania) $1.75
Penna Grade Oil in Southwest Pennsylvania Lines (Pennsylvania) 1.70
Pennsylvania Grade Oil in Southwest Pennsylvania Lines (Apr. 27, 1931).. 1.60
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia) 1.50
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio) (Sept. 14, 1930) 1.35
Corning Grade Oil in Buckeye Pipe Line Co.'s Line (Mar. 11, 1931) ..... .80
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) 1.10
Wayne District Oil in Cumberland Pipe Lines 1.17

(Continued on Page 142)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Oklahoma, Kansas, East Central Texas	2 Ranger, North Texas and Cooke County, Texas	3 East Texas	4 North Louisiana and Arkansas	5 Carson and Hutchinson Counties, Texas	6 Gray County, Texas	7 Grade B Gulf Coast and Refugio, Texas	8 Salt Creek, Wyoming	9 Stephens, Arkansas
Below 25	....	....	....	....	....	....	.60	....	....
25 to 25.9	....	....	....	....	....	....	.61	....	....
26 to 26.9	....	....	....	....	....	....	.63	....	....
27 to 27.9	....	....	....	....	....	....	.65	....	....
28 to 28.9	....	....	....	....	....	....	.67	....	....
Below 29	.43	.33	.43	.43	....	....	....	....	.54
29 to 29.9	.45	.35	.45	.45	....	....	.69	.45	.56
30 to 30.9	.47	.37	.47	.47	....	....	.71	.47	.62
31 to 31.9	.49	.39	.49	.49	....	....	.73	.49	.66
32 to 32.9	.51	.41	.51	.51	....	....	.75	.51	.70
33 to 33.9	.53	.43	.53	.53	....	....	.77	.53	....
34 to 34.9	.55	.45	.55	.55	.30	.33	.79	.55	....
35 to 35.9	.57	.47	.57	.57	.32	.35	.81	.57	....
36 to 36.9	.59	.49	.59	.59	.34	.37	....	.59	....
37 to 37.9	.61	.51	.61	.61	.36	.39	....	.61	....
38 to 38.9	.63	.53	.63	.63	.38	.41	....	....	....
39 to 39.9	.65	.55	.65	.65	.40	.43	....	....	....
40 and above	.67	.57	.67	.67	.42	.45	....	....	....

Column 1—Stanolind Crude Oil Purchasing Co. posted above prices on March 5, effective in Kansas, Oklahoma and East Central Texas, where it purchases oil. Magnolia Petroleum Co. posted same day but with these differences: Below 26 degrees, 40 cents; 26-26.9 degrees, 41 cents; 27-27.9 degrees, 42 cents; 28-28.9 degrees 43 cents. Tidal Refining Co. and Tidal-Western Oil Corp. adopted new price schedule March 5. Mid-Continent Petroleum Corp., Continental Oil Co., H. F. Wilcox Oil & Gas Co., Eason Oil Co., Standard Oil Co. of Kansas, Sinclair Refining Co., White Eagle Oil Corp. and Producers Oil Co. met the price on March 6, Champlin Refining Co. on March 7, Carter Oil Co., The Texas Company, Humble Oil & Refining Co., Empire Pipe Line Co., Gypsy Oil Co. and Gulf Pipe Line Co. met Stanolind prices on March 10, Pure Oil Co. posted same schedule in Van, Texas, Pool, March 5.

Column 2—Posted by Humble Oil & Refining Co., April 21. Met by Stanolind Crude Oil Purchasing Co., Gulf Pipe Line Co., Tidal Western Oil Co., Continental Oil Co., April 21. By The Texas Company and Magnolia Petroleum Co., April 23.

Column 3—Magnolia Petroleum Co., March 26, 1931; Humble Oil & Refining Co., April 21, 1931. Gulf Pipe Line Co., April 21, 1931.

Column 4—Standard Oil Co. of Louisiana and The Texas Company posted March 16. Standard prices apply to Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, De Soto, El Dorado, Cotton Valley, Sarepta and Carterville.

Column 5—Humble Oil & Refining Co., April 21. Other buyers met price effective April 21.

Column 6—Humble Oil & Refining Co., March 21. Other buyers met price effective April 21.

Column 7—Humble Oil & Refining Co., March 21. Gulf Pipe Line Co. met price effective April 21.

CALIFORNIA CRUDE OIL PRICES

(Posted by Union Oil Co. March 30 and the Standard Oil Co. of California March 31)

	Alamitos Hts., Signal Hill, Seal Beach, Torrance, Athens, Rosecrans, Dominguez, Rosecrans, Montebello, Springs, Huntington Beach, East Coyote, Richfield, Brea-Olinda	Santa Paula	Orcutt	Coalinga, McKittrick, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills
11 to 13.9	....	....	....	$.50
14 to 14.9	$.65	$.60	$.55	.55
15 to 15.9	.65	.60	.55	.55
16 to 16.9	.65	.60	.55	.55
17 to 17.9	.65	.60	.55	.55
18 to 18.9	.65	.60	.55	.55
19 to 19.9	.65	.60	.55	.55
20 to 20.9	.65	.58	.53	.53
21 to 21.9	.62	.56	.51	.51
22 to 22.9	.59	.53	.49	.49
23 to 23.9	.56	.50	.47	.47
24 to 24.9	.53	.47	.45	.45
25 to 25.9	.50	.44	.43	.43
26 to 26.9	.47	.41	.41	.41
27 to 27.9	.44	.38	.39	.39
28 to 28.9	.41	.35	.37	.37
29 to 29.9	.38	....	.35	.35
30 to 30.9	.35	....	....	....

For the time being the Union Oil Co. and the Standard Oil Co. will not post a schedule of crude oil prices for the Playa del Rey and Kettleman Hills Fields.

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns May 4

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago	14.0	14.0	3.0	9.0
Decatur, Ill.	14 4	14 4	3.0	9.0
E. St. Louis	13.7	13 7	3.0	8.2
Joliet	14.4	14.4	3.0	9.0
Peoria	14 4	14 4	3.0	9.0
Quincy	14 2	14 2	3.0	8.8
Davenport, Ia.	14 5	14.5	3.0	9.3
Des Moines	14.5	14.5	3.0	9.2
Keokuk	14 5	14 5	3.0	9.3
Sioux City	14.1	14.1	3.0	8.9
Duluth, Minn.	15.5	15.5	3.0	9.9
Mankato	15.1	15.1	3.0	9.7
Minneapolis	15.2	15.2	3.0	9.9
La Crosse, Wis.	16 2	16.2	4.0	10.0
Milwaukee	15.1	15.1	4.0	8.9
Madison	15.3	15.3	4.0	9.1
Detroit, Mich.	14.8	14.8	3 0	10.7
Grand Rapids	14.7	14.7	3.0	10 6
Saginaw	14.9	14.9	3.0	10.8
Evansville, Ind.	15.1	15.1	4.0	9 9
Indianapolis	15.3	15.3	4.0	10.1
South Bend	15.4	15.4	4.0	10.2
Fargo, N. D.	16.9	16.9	3.0	11.0
Huron, S. D.	16.3	16.3	4.0	10.7
Sioux Falls	15.8	15.8	4.0	10.4
K. C., Mo.	13.9	13 9	3.0	7.6
Springfield*	13 9	13 9	3.0	8.5
St. Louis*	12.9	12.9	3.5	8.3
St. Joseph	13.5	13 5	3.0	7.5
Wichita, Kans.	12.8	12.8	3.0	7.8
Bartlesville, Ok.	13.0	16.0	5.0	7.5

*State tax 2 cents, remainder city tax.

Effective April 15—Discounts on Q.D.A. on 1,000 gallons or more per month throughout territory: Red Crown Ethyl gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price.

Discount in Chicago division on 1,000 gallons or more per month: Red Crown Ethyl gasoline, 4 cents off tank wagon price; Red Crown gasoline, 3½ cents off tank wagon price; Stanolind Blue gasoline, 2 cents off tank wagon price.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

PACIFIC COAST TERRITORY

	Gasoline			Kero.
	Wh'le'e price	Retail* price	Incl'ds tax of	tank wagon
Fresno	14.0	11.0	3.0	17.0
San Francisco	14.0	11.0	3.0	15.5
Los Angeles	13.5	10.5	3.0	15.5
Reno, Nev.	20.0	19.0	4.0	19.0
Portland, Ore.	16.5	14.5	4.0	16.5
Seattle, Wash.	17.0	14.0	5.0	16.5
Tacoma	17.0	14.0	5.0	16.5
Spokane	21.0	20.0	5.0	20.5
Phoenix, Ariz.	18.5	20.0	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 3 cents plus a 3-cent special temporary discount subject to withdrawal at any time.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.8	17.6	3.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	16.5	16.5	3.0	13.5
Augusta, Me.	18.8	18.8	4.0	14.8
Manch'tr, N. H.	18.4	18.4	4.0	14.0
Burlington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12 0	8.0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.0
Stanisol	16.2	11.0

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

All dumps of 50 gallons or more ..... .07

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	18 0	16 0	6.0	12.5
Augusta	18.0	20.0	6 0	14.0
Macon	18.0	18.0	6.0	13.0
Savannah	18 0	18 0	6.0	12.0
Birm'ham, Ala.	17 0	19.0	5.0	13.0
Mobile	17.0	19 0	4.0	13.0
Montgomery	17 0	17.0	4.0	13.5
Clarks'le, Miss.	18 0	20 0	5.0	13 5
Jackson	16.0	13.0	5.0	11.0
Natchez	18 0	20.0	5.0	13.5
Gulfport	16.0	16 0	5 0	13.5
Vicksburg	16 0	18 0	5.0	11.0
Jack'ville, Fla.	15.0	17.0	6.0	12.0
Miami	18 0	20.0	6 0	13 0
Pensacola	16.0	18 0	6.0	13 0
Tampa	17.0	17.0	5.0	13 0
Lexington, Ky.	17 0	18 0	5.0	12 0
Covington	16.0	17.0	5.0	11.0
Louisville	16.0	17.0	5 0	11 0
Ashland	17 0	19 0	5 0	13.0
Paducah	17.0	18.0	5 0	11.0
Bowling Green	19 0	21.0	5.0	14.5
Corbin	18.0	19.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atl'tic City, N.J.	14 2	16.2	3.0	11.5
Newark	13.2	15.5	3.0	10.5
Annapolis, Md.	16.0	17.0	4.0	11.0
Baltimore	15.2	16.2	4.0	9.5
Cumberland	17.0	18.0	4.0	12.4
Wash'gton, D.C.	13.4	14.4	3.0	10.0
Danville, Va.	17.8	18.8	5.0	11.8
Norfolk, Va.	16.3	17.8	5.0	10.0
Petersburg	17.3	18.3	5.0	11.3
Roanoke	17.7	18.7	5.0	12.0
Richmond	16.7	17.7	5.0	10.7
Charles'n, W.Va.	16.5	17.5	4.0	11.5
Keyser	17.1	18.1	4.0	12.1
Parkersburg	15.2	16.2	4.0	10.2
Wheeling	16.4	17.4	4.0	11.4
Charlotte, N. C.	19.0	20.0	6.0	11.0
Hickory	19.6	20.6	6.0	12.6
Mt. Airy	19.5	20.5	6.0	12.5
Salisbury	19.2	20.2	6.0	12.5
Charleston, S.C.	17.3	18.3	6.0	10.3
Columbia	19.2	20.2	6.0	12.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers, except in Washington, D. C., and in Maryland where discount is 3 cents.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	15.0	18.0	4.0	10.0
Fort Worth	12.0	14.0	4.0	10.0
Houston	14.0	18.0	4.0	11.0
San Antonio	14.0	18.0	4.0	10.0
El Paso	14.0	18.0	4.0	12.0
Texarkana	16.0	16.0	4.0	11.0
Muskogee, Ok.	13.0	16.0	5.0	8.0
Okla. City	11.0	13.0	5.0	8.0
Tulsa	11.0	11.0	5.0	8.0
Ft. Smith, Ark.	15.5	16.5	5.0	11.0
Little Rock	16.5	17.5	6.0	11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	15.0	18.0	4.0	12.5
Pueblo	14.0	17.0	4.0	12.0
Grand Junction	16.0	19.0	4.0	†4.5
Casper, Wyo.	15.0	18.0	4.0	10.0
Cheyenne	16.0	19.0	4.0	11.5
Butte, Mont.	17.0	20.0	5.0	16.0
Billings	20.0	23.0	5.0	14.5
Great Falls	20.0	23.0	5.0	16.0
Helena	20.0	23.0	5.0	16.0
S'lt Lake, Utah*	17.0	20.0	3.5	16.0
Albu'que, N. M.	16.0	20.0	5.0	14.0
Boise, Idaho†	20.5	....	5 0	18.0
Twin Falls‡	20.5	....	5.0	18.0

†Less 2 cents. ‡Less 3½ cents.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	*12.0	*14.0	...	12.0
Philadelphia	*12.0	*14.0	...	12.0
Scranton	*12.0	*14.0	...	12.0
Allentown	*12.0	*14.0	...	12.0
Altoona	*12.0	*14.0	...	12.0
Erie	*12.0	*14.0	...	12.0
Dover, Del.	15.0	17.0	3.0	12.0
Wilmington	15.0	17.0	3.0	12.0
Springf'd, Mass.	14.5	16.5	3.0	11.0
Fall River	14.1	16.1	...	11.0
Worcester	14.3	16.3	3.0	11.0
Boston	13.5	15.5	3.0	11.0
Providence, R.I.	13.7	15.7	3 0	11.0
Hartford, Conn.	14.5	16.5	3.0	10.0
New Haven	14.6	16.6	3.0	10.0

*Does not include tax of 3 cents in Pennsylvania. Pennsylvania tax is collected by the dealer and paid by him direct to the State. Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purpose of resale. Atlantic Refining Co. also recognises a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	15.5	16.5	6.0	12.0
Baton Rouge	15.5	16.5	5.0	12.0
Alexandria†	16.5	17.5	6.0	12.0
Lafayette*	16.5	17.5	6.0	12.0
Lake Charles*	16.5	17.5	6.0	12.0
Shreveport	15.5	16.5	5.0	13.0
Knoxville, Tenn.	18.0	19.0	5.0	13.5
Memphis	15.9	16.0	5.0	10.0
Chattanooga	17.5	18.5	5.0	12.0
Nashville	17.0	18.0	5.0	12.5
Bristol	18.5	19.5	5.0	14.0
Lt. Rock, Ark.	16.5	17.5	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in parish of Rapides.

Two-cent discount off gasoline tank wagon price to dealers and commercial accounts.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	15.0	16.0	4.0	†13.0

*Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	12.9	12.9	4.0	9.25
McCook	16.00	17.75	4.0	10.75
Norfolk	15.75	16.75	4.0	9.75
N. Platte	16.75	17.75	4.0	10.50
Scottsbluff	16.00	16.00	4.0	10.25

Note—Dealers' discounts allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off station price; third grade, 1 cent off station price.

TANK WAGON CHANGES

Continental Oil Co. reduced the gasoline tank wagon price to 20.5 cents in Boise, Ida., April 25 and established a 2-cent discount off this price to dealers. On the same date the gasoline tank wagon price was reduced 1 cent in Twin Falls, Ida., making the new price 20.5 cents with a 3½-cent discount to dealers. April 28 the kerosene price was reduced to 14½ cents in Grand Junction, Colo. On the same date a general reduction in gasoline prices was posted throughout Utah.

Standard Oil Co. (Nebraska) reduced the gasoline tank wagon and station prices to 12.9 cents each in Omaha.

Standard Oil Co. (Kentucky) reduced the gasoline tank wagon and station prices 2 cents in Jacksonville, Fla., April 27.

Magnolia Petroleum Co. reduced the gasoline tank wagon and station prices 2 cents to 11 cents each in Tulsa, May 5. On April 11 the gasoline tank wagon and station prices were reduced one-half cent in Little Rock, Ark., and advanced one-half cent in Fort Smith, Ark.

Standard Oil Co. (Indiana) reduced the gasoline tank wagon and station prices to 14.5 cents each in Des Moines, Iowa, April 17, and to 16.9 cents each in Fargo, N. Dak., April 22.

Standard Oil Co. of California reduced the gasoline wholesale price 1 cent in Portland, Ore., to 16.5 cents.

CRUDE OIL PRICE CHANGES

Effective May 2 the Tidal Refining Co. posted prices in East Texas as follows: Below 29 degrees 43 cents, with a 2-cent differential upward to 40 degrees and over, at 67 cents. The oil will be run and purchased under division orders now in effect.

OWENSBORO GAS SYSTEM

OWENSBORO, Ky., May 4.—A decision to submit to the voters of Owensboro a bond issue of approximately $250,000, to install a municipal natural gas distribution system in the city has been reached by city officials.

City Attorney John A. Dean advised the city officials to wait until August to call the election. An estimate of the cost of installing a distribution system, which was said to have been made in 1928 for private interests by an engineering company, was loaned to the city officials. This estimate provided for laying 101 miles of pipe and installing 6,000 meters for a cost of $274,469. Of the 101 miles of pipe, 3.93 miles would be 12-inch pipe; 1.42 miles, 8-inch; 5.96 miles, 6-inch; 10.40 miles, 4-inch; 3.30 miles, 3-inch; 20.13 miles, 2-inch; and 56.80 miles, 1-inch pipe.

BUILD NEW PLANT

ABILENE, Tex., May 5.—E. W. Moutray of Abilene has started the construction of a refinery at Hawley, near Abilene on the Wichita Valley railroad. The plant is to cost $25,000 and will be in operation within 30 days.

The plant is to have a capacity of 1,000 bbls. of crude per day. Crude will come from Moutray's wells and from others in the vicinity of his production.

The plant will manufacture gasoline and light oils of every specification. No lubricants will be made. J. P. Bohannon of Abilene has been selected as manager and sales manager for the new refinery.

CRUDE OIL PRICES

(Continued from Page 141)

Tide Water Pipe Co.

Bradford district (Apr. 23, 1931)	$2.00
Allegany district (Apr. 23, 1931)	2.00

Pure Oil Co.

Cabin Creek, W. Va. (Apr. 23, 1931)	$1.50
Kelly Creek, W. Va. (Apr. 23, 1931)	1.50
Bradford Hollow, W. Va. (Apr. 23, 1931)	1.50

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective Mar. 6, 1931)

Lima	$ .90
Wooster	.90
Illinois	.80
Indiana	.50
Princeton	.80
Plymouth	shut in
Western Kentucky	.75
Midland, Mich.* (Mar. 13, 1931)	.75
Dundee, Mich. (Oct. 26)†	
	Same as Mid-Continent gravity scale
Upper and Lower Traverse sands, Mich. (Oct. 28, 1930)†	
	Same as Mid-Continent gravity scale
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (Oct. 28)‡	.85
Oil City, Ky. (Apr. 1, 1931)‖	.60
Oil Springs (Canada) (Oct. 28)¶	1.57
Petrolia (Canada) (Oct. 28)¶	1.50
Alberta (Canada)‖:	
50° and above (Mar. 1, 1931)	2.36
45 to 45.9° (Mar. 1, 1931)	1.87

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Paragon Development Co. ‖Posted by Stoll Refining Co. ¶Posted by Imperial Oil, Ltd. §Posted by Imperial Oil, Ltd., and Regal Oil & Refining Co. of Calgary.

MEXICAN CRUDE

Panuco*	$ .46

*F.o.b. ship, based on March transactions and exclusive of taxes and bar dues.

The MOTOR OIL "MELLOWED A HUNDRED MILLION YEARS"

Simplifies its name

HENCEFORTH the Sinclair Refining Company will discontinue the use of "Mobiline" as a trade name for its Pennsylvania Motor Oil.

With the tremendous increase in the use of Sinclair Mobiline Pennsylvania Motor Oil it has been decided, for the sake of brevity and clarity, and to avoid confusion with any other motor oil, to eliminate the word Mobiline. The new name will be simply "Sinclair Pennsylvania Motor Oil".

THE CHANGE IS IN NAME ONLY

Sinclair Pennsylvania Motor Oil will continue to be made 100% from Bradford-Allegany crude oil—the highest priced of all Pennsylvania grade crude oils—the rare oil formed by Nature in the Devonian Age more than a hundred million years ago.

Sinclair Pennsylvania will continue to be the finest motor oil that money can buy—an oil that is triple-filtered, stripped of its carbon-forming compounds and freed from trouble-making petroleum jelly at as low as 60° F. below zero, a temperature much lower than is required for the removal of wax only.

If you have not yet stocked Sinclair Pennsylvania Motor Oil a postal addressed to our nearest office will bring a Sinclair representative who will give you full details about this fast selling Pennsylvania grade oil.

Sinclair Refining Company (Inc.), New York, Atlanta, Chicago, Fort Worth, Houston, Kansas City. Sinclair Refining Company of Canada, Ltd., Toronto. Sinclair Refining Company of California, Los Angeles.

SINCLAIR *Pennsylvania* MOTOR OIL

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guaranteed by SINCLAIR REFINING CO. INC. to be 100% pure PENNSYLVANIA GRADE OIL

Company Reports Reflect Conditions

Effects of Wild Competition and Overproduction Seen in Statements. California's Low Price Record

Union Oil Co. of California March 31 reported total current assets approximated $68,000,000, a decline of about $2,000,000 from December 31, 1930. Cash or its equivalent amounted to $19,700,000. Current liabilities on March 31 approximated $6,600,000, a decline of $1,500,000 from the close of last year.

Sales for the first three months of 1931 at $18,200,000 showed a decline of $4,550,000 from the first quarter of 1930, due principally to the considerably lower realization for gasoline and the fact that the company has not sought any substantial amount of business in markets that were unprofitable.

In connection with the lower amount set aside for depletion, depreciation and intangible drilling expense, L. P. St. Clair, president, pointed out that during the first three months of 1930 the company operated an average of 33 strings of tools in California and the $3,500,000 charged out included $1,630,000 for drilling expenditures. During the first quarter of the current year, an average of only seven strings of tools were operated in California and the charge against income for drilling was $275,000.

Net income after all deductions, including reserves, was $1,800,000 for the quarter, equivalent to 41 cents a share on 4,386,070 shares of $25 par outstanding. In the like 1930 quarter net was $2,600,000, or 61 cents a share on 4,264,067 shares. The company fell short by only a small amount of covering the quarterly dividend of 50 cents.

"Due to competition and the overproduction of crude oil in California as related to available markets," Mr. St. Clair states, "gasoline prices have been materially reduced throughout the entire Pacific Coast during the past quarter. Commencing February 25, last, and continuing throughout the month of March, a decline of approximately 10 cents per gallon occurred, with the result that gasoline is now selling in Los Angeles for the lowest prices on record. This resulted in the posting of materially lower prices for crude oil, the schedule for 30° gravity oil at Signal Hill having been reduced $1.03 a barrel to 35 cents as of March 31, last.

"Production, subject to royalty, of crude oil and natural gasoline by Union Oil Co. approximated 3,600,000 bbls., compared with 4,750,000 bbls. for the same three months of last year. The average daily production, subject to royalty, of crude oil and natural gasoline from 458 wells is at present about 41,000 bbls. In addition 482 well capable of producing about 54,000 bbls. a day are shut in."

Atlantic Lobos

Atlantic Lobos Oil Co. has called a special meeting of stockholders for May 12 to vote on an adjustment of capital structure to bring it in line with current assets. The company has organized a new unit known as Carsil Oil & Gas Co. which has acquired leases in Duval and Jim Wells Counties, Texas, and has started drilling. Net loss of $38,926 was reported by the company for 1930.

Houston Oil

Report of Houston Oil Co. of Texas and its wholly owned subsidiary, Houston Pipe Line Co., for quarter ended March 31, 1931, shows consolidated net income of $228,703 after interest, depreciation, depletion, abandoned leases, federal taxes, etc., equivalent after dividend requirements on $8,947,600 6 per cent preferred stock to 8 cents a share (par $25) on 1,098,611 shares of common stock. This compares with $523,249 or 35 cents a share on common in first quarter of 1930, based on same share basis.

Houston Oil Co. of Texas, excluding Houston Pipe Line Co., reports for quarter ended March 31, 1931, net income of $168,433 after taxes and charges comparing with $98,477 in March quarter of previous year.

Extra New Jersey Dividend

Standard Oil Co. of New Jersey declared the usual extra dividend of 25 cents and the regular quarterly dividend of 25 cents, both payable June 15 to stock of record May 16.

Standard Oil of New York

Standard Oil Co. of New York declared the regular quarterly dividend of 40 cents, payable June 15 to stock of record May 8.

Gas Reorganization

The reorganization committee approved reorganization plan of Inland Utilities, Inc., Twin States Natural Gas Co. and Midland Natural Gas Co.

Stanolind Crude Oil

The Stanolind Crude Oil Purchasing Co., a subsidiary of the Standard Oil Co. of Indiana, has called for redemption on July 1, 1931, at 102 and accrued interest, $5,000,000 of the $50,000,000 authorized 10-year 5½ per cent Series A bonds dated January 1, 1928.

With the calling of $5,000,000 in bonds on July 1, there will remain outstanding after that date slightly over $34,000,000 of the original issue.

Plymouth Oil

Report of Plymouth Oil Co. for year ended December 31, 1930, shows net income of $2,187,907 after depreciation, depletion, losses on abandoned wells, federal taxes, minority interests, etc., equivalent to $2.08 a share (par $5) on 1,050,000 shares of capital stock. This compares with net income of $2,241,392 or $2.13 a share in 1929.

Warner-Quinlan

Warner-Quinlan Co. reports for quarter ended March 31, 1931, an operating loss of $149,228 after interest, depreciation, depletion, taxes, and after including proportion of profit or loss of affiliated companies. This does not give effect to a profit during the quarter of $128,312 from sale of undeveloped oil leases and discount on bonds redeemed, which made net loss for the quarter of $20,916. This compares with net loss of $310,557 in first quarter of 1930.

Phillips Petroleum

Phillips Petroleum Co., in its report to stockholders, covering the first quarter of 1931, shows a gross income of $14,297,248, compared with $11,931,003, in corresponding period of 1930, an increase of $2,366,245.

The company shows a deficit of $619,351 for the first quarter of this year, after depreciation, depletion, retirements and other amortization, against a net profit of $1,604,844 for the same period of 1930.

The company's paid in capital and earned surplus totaled over $153,000,000 as of March 31, equivalent, President Frank Phillips points out in his letter, to over $35 per share after charging off all known losses and after transferring over $80,000,000 earnings to depletion and depreciation reserves.

"Our company is in sound condition and is meeting the situation by an orderly and gradual reduction in all items of expenditure. Our costs of producing, refining, transporting and distributing are unquestionably among the lowest and efforts are being made to further reduce them.

"Fundamental forces are working for the correction of the oil situation as is evidenced by a reduction of more than 60 per cent in number of wells drilling in the country compared with one year ago," said Mr. Phillips.

Continental Oil

Report of Continental Oil Co. (Delaware) and subsidiaries for quarter ended March 31, 1931, shows net loss of $2,491,143 after franchise taxes, intangible development costs, depletion, depreciation, interest and minority interest. This compares with profit before federal taxes of $523,302 in first quarter of 1930.

To meet the condition of curtailed production and decreased prices for petroleum and its products, which prices are the lowest since 1892, Continental Oil Co. states it has succeeded in reducing its expenses, although numerous properties have been added to the company's holdings necessitating additional expense for their operation. Total operating charges for the first quarter of 1931 were $3,433,588 less than for the like quarter of 1930.

As of March 31, 1931, the ratio of current assets to current liabilities was 8.38 to 1. During the first quarter this year the company retired $2,415,074 of its funded debt, reducing the total to $19,979,753.

Deep Rock Oil

A decrease of $1,952,327 in net earnings is shown in the report for 1930 for Deep Rock Oil Corp. and subsidiaries. Overproduction, proration in Oklahoma and lowered prices on products are indicated as the adverse factors. Potential daily crude production on March 1 is given as 41,200 bbls. Net operating earnings after deduction of interest charges are $1,076,943 for 1930 and $3,194,781 for 1929.

The Texas Corporation

At the annual meeting of The Texas Corporation, R. C. Holmes, president, in discussing general conditions in the industry, stated that he believed the movement for an interstate oil compact for more effective control of production was a constructive step.

"I am hopeful of results," Mr. Holmes

(Continued on Page 151)

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending April 25)

1931 High	1931 Low	Week ended Apr. 25 Sales	Week ended Apr. 25 High	Week ended Apr. 25 Low	Close Apr.29	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1	⅛	No sales ..	..	..	¼	Atlantic Lobos	499,448	N.P.	....	5-28-30	..	..	..	..	1	¼
12⅞	7⅞	50	8	8	..	Borne Scrymser	$1,000,000	$25	....	10-15-30	56½	44½	46½	25	25	11¼
51	40	No sales ..	..	..	..	Buckeye Pipe Line	$10,000,000	$50	$1Q	3-14-31	76	53	74½	55	69	39⅞
129½	110	800	129½	120	119	Chesebrough Mfg.	$3,000,000	$25	$1Q‡	3-31-31	161	117	210	130	184⅞	104¼
30	20⅝	No sales ..	..	..	..	Creole Petroleum	(sh) 5,977,873	N.P.	....	.....	17½	9½	11¾	5⅝	7⅝	3
3½	2⅛	6,400	2½	2¼	2¼	Cumberland Pipe Line	$1,500,000	$50	50cQ	3-16-31	114	67	75¾	40	65¾	20¼
29¾	27	No sales ..	..	..	..	Eureka Pipe Line	$5,000,000	$100	$1Q	2- 2-31	88	64⅛	70½	42	54¾	26
2⅞	1½	200	1½	1½	..	Galena Signal Oil	$16,000,000	$100	....	.....	13	4¼	6½	3	7	2½
72	53¼	6,800	54⅛	53⅜	53¼	Humble Oil & Refining	$74,103,300	$25	50cQ	4- 1-31	114¾	59½	128	74⅛	119	57¼
18¼	11½	23,200	13⅝	11½	12⅛	Imperial Oil of Canada	(sh) 25,421,768	N.P.	12½cQ	3- 2-31	104	56¾	41	22	30	15
21⅛	14½	700	15⅞	14½	..	Indiana Pipe Line	$3,000,000	$10	50cQ	2-14-31	91⅞	74⅜	41⅞	26	41	14½
15½	11	39,900	11⅞	11⅛	11⅜	International Petroleum	(sh) 14,247,088	N.P.	25cQ	3-16-31	55	35	30⅜	15	24	11⅜
17½	12¼	800	14⅞	14	....	National Transit	$6,362,500	$12.50	25cQ§	4-16-31	32⅜	19⅜	25⅛	10⅛	22⅜	11½
14½	10	200	10	10	..	New York Transit	$1,000,000	$10	25cQ	4-15-31	75	38½	17½	10	21⅜	10⅛
30	28	No sales ..	..	..	..	Northern Pipe Line	$2,000,000	$50	$2SA	1- 2-31	69	56½	63	41	54	26¼
15½	8	400	12	10	10	Penn Mex Fuel	$10,000,000	$25	....	12-15-30	84	28	44½	20	32	12
8	6	No sales ..	..	..	..	Solar Refining	$4,000,000	$25	....	12-20-29	..	..	50	29	33	4⅞
15	10	No sales ..	..	..	..	Southern Pipe Line	$1,000,000	$10	50c	3- 2-31	19	15	22½	13	20⅞	8⅜
23⅞	14	1,900	17	15⅛	14	South Penn Oil	$30,000,000	$25	25cQ	3-31-31	71⅞	36¾	60¼	35⅛	45⅞	16⅛
36	33	No sales ..	..	..	..	Southwest Pennsylvania Pipe Line	$1,750,000	$50	$1Q	3-16-31	102	70	70	60	64	32
38½	24⅝	48,000	30⅛	27	25⅛	Standard Oil of Indiana	$348,175,069	$25	50cQ	3-16-31	95⅞	70⅞	63	45	59⅞	30
23⅝	17⅛	6,600	20	18⅝	18¼	Standard Oil of Kentucky	$25,654,516	$10	40cQ	3-31-31	179¾	122¼	46⅞	29	40½	18⅝
36½	23	100	28⅜	28⅜	23	Standard Oil of Nebraska	$4,649,225	$25	50cQ	3-20-31	54⅞	39⅞	50¼	40	48⅞	34⅝
62½	49	550	52	49¼	49¼	Standard Oil of Ohio	$14,000,000	$25	62½cQ	4- 1-31	134	71	129	60	108½	43¼
3½	3½	No sales ..	..	..	..	Swan-Finch Co.	$861,466	$25	....	1-15-29	23¼	16	18	10	10	4
69¾	40	20,200	49⅝	41½	41⅛	Vacuum Oil Co.	$126,180,350	$25	$1Q	3-20-31	111	72	133¾	75	97⅞	45⅜

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus 50 cents extra. §Plus 10 cents extra.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.
(Complete record week ending April 25)

1931 High	1931 Low	Week ended Apr. 25 Sales	Week ended Apr. 25 High	Week ended Apr. 25 Low	Close Apr. 29	Stocks		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1¾	⅝	5,600	1	⅞	¾	American Maracaibo	(sh)	700,000	N.P.	....	.....	9½	3⅛	8⅝	1⅛	4½	½
16⅞	10	1,300	10¾	10	..	British American Oil Corp. (new) coup.		1,311,321	N.P.	20cQ	4- 1-31	55	32¾	62	7⅞	23	13⅜
2⅜	½	3,500	1⅜	1⅛	1	Carib Syndicate		$131,250	25c	....	.....	4½	3⅞	4⅞	1	2¾	⅝
20¾	13½	181,000	17¼	15¼	14½	Cities Service	(sh)	24,290,359	N.P.	30cA‡	4- 1-31	90⅞	54	68⅛	20	44¼	13
84¾	79⅝	1,800	83½	82¼	79⅝	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	4- 1-31	103¼	94½	98⅝	84	93⅞	78¼
½	1/16	1,000	1/16	1/16	1/16	Colombia Syndicate		$2,000,000	$1	....	.....	3¾	.76	2	½	¾	⅛
2¾	1½	100	1½	1½	..	Consolidated Royal		$5,000,000	$10	7½cQ	4-25-31	8⅞	6¼	11⅛	2½	5⅞	2
⅝	⅜	200	⅝	⅜	..	Crown Central		.....	....	....	.....	..	..	..	..	..	..
5	3½	100	3½	3½	..	Darby Petroleum		1,019,392	N.P.	....	10-15-30	33½	3¼	26	6½	21¾	4¼
6	2⅝	200	3½	3⅛	3	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	2¼	1	11	2	11	2
40⅛	30	100	36	35	35	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	21⅛	7½	44	20¾	60	30
75½	51⅝	5,800	58	53½	52¾	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	4- 1-31	165	101⅛	209	115	166⅞	58½
⅝	⅜	8,700	9/16	½	1/16	Intercontinental Petroleum		$5,682,000	$5	....	.....	3⅜	1	2⅞	⅜	1¾	⅜
1⅞	⅝	100	⅞	⅞	..	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3	1¼	3⅝	1¼	3	⅞
1½	½	7,700	⅞	½	½	Leonard Oil & Development		$50,000,000	$25	....	.....	9⅜	5⅛	6⅛	1	4¾	½
6¾	4½	800	5½	5	4½	Lion Oil & Refining	(sh)	250,000	N.P.	....	10-27-30	43⅞	20	38⅞	18	29	4⅞
25	16	6,400	18½	16	16¾	Lone Star Gas	(sh)	5,000,000	N.P.	22cQ	3-31-31	69⅛	48½	67⅞	28	55⅞	19⅝
½	⅛	22,800	1/16	1/16	1/16	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1⅞	½	1¼	¼	½	⅛
5	3	100	5	5	..	Margay Oil Corp.		160,000	N.P.	....	7-10-30	48½	32	38½	14	16	3
4⅜	1½	1,200	3¼	3	..	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	8	2¾	6⅜	2¼	7½	1⅜
½	¼	No sales	..	..	..	Mountain & Gulf		$4,000,000	$1	1cQ	4-15-31	1¾	.76	1½	¾	¾	⅜
5⅞	3¾	2,000	4⅜	4	3¾	Mountain Producers		$1,682,182	$10	25cQ	4- 1-31	28⅞	19½	22⅞	7	12⅛	3¾
1½	1	1,200	1¼	1⅛	1	New Bradford Oil		$1,095,291	$5	4cQ	1-15-31	5⅝	4¼	5	2½	3½	1⅛
3	1⅞	300	2	2	..	New Mexico and Arizona		$1,000,000	$1	....	.....	11⅞	7⅛	9⅜	2¼	7¼	1½
3¼	1¾	No sales	..	..	..	North Central Texas	(sh)	400,000	N.P.	....	9- 2-30	14¼	8½	18½	6⅛	11¼	2⅛
½	¼	20,800	1/16	¼	1/16	Pandem	(sh)	489,875	N.P.	....	.....	6	2⅛	3½	½	2½	¼
2	1⅛	1,300	1¼	1⅛	..	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	15⅝	8½	10½	1⅞	4⅜	⅞
2½	1¾	No sales	..	..	..	Red Bank Oil	(sh)	250,000	N.P.	....	.....	18	4⅞	16	9⅝	10⅛	1½
1½	1	500	1⅛	1	..	Reiter-Foster	(sh)	388,584	N.P.	....	12- 2-29	12⅞	4⅛	8½	1⅛	5⅜	1
3	2	1,700	2	2	..	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	12	4⅛	11	3	8⅝	2
1⅜	1	200	1	1	..	Salt Creek Consolidated	(sh)	1,286,300	$10	7cQ	4- 1-31	7¼	5½	5⅞	1⅞	2½	½
7¾	5½	2,600	6	5½	..	Salt Creek Producers	(sh)	1,496,859	$10	50c	2- 2-31	35	23⅛	25⅞	9	15¼	5¼
5¼	2¼	9,900	3⅝	2⅝	2½	Sunray Oil Corp.	(sh)	1,163,185	$5	5%Q§	4-15-31	..	..	12	5⅝	10	2
1⅞	¾	2,100	1	⅞	⅞	Venezuelan Petroleum	(sh)	755,090	$5	....	2-15-30	9⅛	4¾	6½	1¾	4½	⅜
3½	1½	100	3	3	2½	Woodley Petroleum		$500,000	$1	....	3-31-29	8¼	4⅞	9½	2	5	½
⅞	⅜	200	½	⅜	..	Y Oil & Gas		100,000	N.P.	....	.....	8⅜	2⅛	2⅞	½	2½	⅜

*Ex-dividend. †Unit of trading less than 100 shares. ‡Payable monthly and monthly stock dividend of one-half per cent. §Paid in lieu of regular cash dividend of 2 per cent.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.
(Complete record week ending April 25)

1931 High	1931 Low	Week ended Apr. 25 Sales	Week ended Apr. 25 High	Week ended Apr. 25 Low	Close Apr. 29	Stocks		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
23	17⅛	2,800	18	17⅛	17⅝	Amerada Corp.	(sh)	922,075	N.P.	50cQ	1-30-31	43⅞	27⅛	42⅝	17½	31½	16½
12⅜	6	1,200	7	6	..	American Republics Corp.	(sh)	209,180	N.P.	$3.50SA	12-10-30	85	51⅛	64¾	12½	37	5⅛
31	26½	20	30	29½	..	Associated Oil		$57,260,300	$25	50cQ	3-31-31	53⅜	37½	47¼	34½	51	30
23⅝	12½	36,200	16½	14⅜	14¾	Atlantic Refining		$66,763,775	$25	25cQ	3-16-31	66⅜	50	77⅞	30	51⅜	16⅝
14½	8	17,000	10	8½	8⅞	Barnsdall Corp. A		$56,546,600	$25	25cQ	2-16-31	54	20	49⅛	20	34	8⅝
12	6⅛	38,100	8¼	7¼	6⅝	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	.....	..	..	47⅞	18	30½	7¾
47	20⅞	23,600	25⅜	21⅛	21¼	General Asphalt	(sh)	413,333	N.P.	75cQ	3-16-31	94⅞	68	94¾	42¼	71½	22⅜
68½	35¼	24,100	49	42	37½	Houston Oil		$24,968,600	$100	....	.....	167	79	109	26	116⅞	29¼
4⅝	2¼	2,500	3¼	2¼	2⅜	Indian Refining		$12,564,070	$10	....	.....	39⅝	9	53	13⅛	17	2
4½	2½	3,600	3⅞	3⅝	2⅝	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	19¾	9⅜	18	7	12	3½
3¾	1⅝	1,400	2	1⅝	..	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	25½	12½	18½	5⅛	10⅜	1⅜
20⅜	10⅝	74,800	19¾	16¼	13¾	Mexican Seaboard	(sh)	1,244,383	N.P.	....	10- 1-24	72	4⅝	59⅜	8¼	37	9¾
16⅜	8	10,200	10¼	9	8⅛	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	50cQ	2-16-31	44½	25⅛	39⅞	22⅛	32	11
19½	9¼	29,500	12⅜	10⅜	9¾	Ohio Oil	(sh)	6,648,052	N.P.	25cQ	3-14-31	84	58½	79⅞	64¼	32	16
35⅛	29½	300	32	32	29½	Pan American P. & T.		$50,084,700	$50	....	12-20-27	50⅞	38¼	69	40½	46½	42
36½	29½	1,800	32	31½	29½	Pan American P. & T. "B"		$121,110,650	$50	....	12-20-27	59⅞	37⅜	69¼	40½	67¼	30
4½	1⅜	2,500	2¼	2	2	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	21⅜	11½	15¼	3	12⅜	1⅜
18	10	No sales	..	..	..	Panhandle P. & R. pfd.		$2,564,400	$100	....	.....	108	70	76	47½	20	47½
16⅝	7	52,265	9⅛	7	7	Phillips Petroleum	(sh)	2,593,075	N.P.	....	1- 2-31	53⅞	35¼	47	24¼	44⅜	11½
1½	⅝	2,900	¾	⅝	..	Pierce Oil Corp.		$29,622,831	$25	....	.....	5¼	½	3⅜	1	2½	½
3⅜	1½	4,800	2⅛	1¾	1½	Pierce Petroleum	(sh)	2,500,000	N.P.	10c	2-16-31	7	3½	5⅞	½	7⅛	1⅜
20⅜	9½	23,400	13	9½	11¼	Prairie Oil & Gas		$60,848,000	$25	50cQ	3-31-31	68	46	65⅜	40½	54	11¼
26½	17⅞	11,000	23	19¼	19½	Prairie Pipe Line		$101,250,000	$25	75cQ	3-31-31	280	172	65	45	60	16⅝
6	2⅛	1,300	3¾	3⅛	2¼	Producers & Refiners		$37,438,950	$50	....	9-15-23	29⅞	16	25⅞	4	11⅞	1
16	10	170	13⅛	11½	10	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	49⅝	41	46¾	25½	40	11½
11⅞	5½	17,800	7⅞	6½	5¾	Pure Oil		$75,959,250	$25	....	9- 1-30	31⅝	19	30¾	20	27¼	7⅝
6⅜	1¾	4,300	2⅝	2	1¾	Richfield Oil (new)		$52,410,875	N.P.	....	.....	56	23	49⅝	20	9¾	4⅛
10¼	4	13,000	6½	4½	4	Rio Grande Oil	(sh)	1,236,270	N.P.	....	7-25-30	37½	32	42½	15	25¾	5
42⅝	28¾	15,200	31⅞	30	28⅜	Royal Dutch, N. Y.	(sh)	611,303	....	$1.3404	1-30-31	64	44⅝	64	43⅛	56½	36⅞
34	25⅞	430	25¾	25⅞	..	Shell Transport & Trading Co.		£23,985,000	£1	$0.966	1-23-31	47⅞	41⅜	51½	40⅝	48⅜	26
10¼	4⅞	23,450	6⅞	5½	5	Shell Union Oil	(sh)	13,066,497	N.P.	....	6-30-30	39¼	23¼	31¾	19	25½	5¼
11	6½	600	6½	6½	..	Simms Petroleum		$8,353,620	$10	....	9-15-30	27¼	18¼	40⅛	15	37	5⅝
15⅞	8½	63,900	11⅝	9⅞	8½	Sinclair Consolidated	(sh)	5,500,000	N.P.	25cQ	4-15-31	46⅜	17⅝	45	21	32	9¾
103	95	500	100	98	..	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	2-14-31	110	102½	111	103	112¼	86
12⅞	5	7,600	7⅜	5⅛	5⅛	Skelly Oil		$27,441,250	$25	....	12-15-30	42⅝	25	40½	28	42	10⅛
51¾	33	46,800	42⅞	38	35⅝	Standard of California	(sh)	12,594,098	N.P.	62½cQ	3-16-31	80	63	81⅞	51½	75	42¼
19	11	1,800	13¾	11	11	Standard of Kansas		$8,000,000	$25	25cQ	3-16-31	37¾	15	33¾	18	49	14⅜
52½	33½	141,600	41	36⅝	36¾	Standard Oil of New Jersey		$634,999,200	$25	25cQ‡	3-16-31	59⅜	37¾	83	49	84⅞	32½
26	17⅝	73,400	20⅞	18⅝	18⅛	Standard Oil of New York		$445,223,675	$25	40cQ	3-16-31	33¼	28¾	48⅛	31¾	40⅜	19⅜
45¼	35	2,700	40⅝	37	35	Sun Oil	(sh)	1,416,869	N.P.	25cQ	3-16-31	77	31½	68⅝	55	70	39
1¾	¾	1,300	1	1	1	Superior Oil Corp.	(sh)	776,979	N.P.	....	12-20-30	..	..	24	5¼	9⅜	¾
36¼	20	118,400	22	21¼	21¾	The Texas Corporation		$246,204,900	$25	75cQ	4- 1-31	74¾	50	71⅞	50	60½	28¼
6½	3¾	5,100	4½	3¾	..	Texas Pacific Coal & Oil Co.		$9,304,890	$10	....	12-31-29	26⅝	12⅛	23⅞	9½	14½	4
18	10½	400	17	13	13	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	3-31-31	41½	19⅝	40	14	31	13
83	67	400	68½	67	..	Tide Water Oil pfd.	(sh)	19,947,000	N.P.	$1.25Q	2-16-31	100⅛	86	97½	85⅛	94⅞	71
9	4½	24,594	6⅛	5¼	4¾	Tide Water Associated	(sh)	5,560,424	N.P.	30cSA	2-16-31	25	14¾	23½	10	17¾	5⅞
68	52	2,800	56⅝	53⅛	52	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	4- 1-31	..	..	90⅞	74⅛	89¾	55
26⅝	14	21,500	20¼	16⅜	16	Union Oil of California		$104,342,375	$25	50cQ	2-10-31	58	42⅜	57	42⅛	50	10⅛
25⅛	20	1,000	21⅛	21	21⅛	Union Tank Car	(sh)	1,254,048	$100	40cQ	3- 2-31	128¼	110	163¾	121⅞	38½	23
7⅜	3¾	1,900	4¼	4	3¾	Warner-Quinlan	(sh)	632,948	N.P.	....	7- 1-30	44⅞	26	42⅞	15	27	4¼
9⅜	6⅛	1,300	8¼	7	6¼	Wilcox Oil & Gas	(sh)	428,907	N.P.	....	5-10-28	..	..	29¾	12⅞	21	6½

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus extra dividend of 25 cents.
In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been stock split-ups.

Of Interest to Sales Departments

Demand for Gasoline Gains 8.4 Per Cent Based on Gas Taxes

Gasoline consumption in 46 states and the District of Columbia for the month of February, 1931, as indicated by reports made by wholesalers and dealers in the various states under provisions of the gasoline tax laws or gasoline inspection laws, totaled 871,720,000 gallons, compared with 823,230,000 gallons in February, 1930, an increase of 48,490,000 gallons, or 5.9 per cent. Daily average consumption for February, 1931, was 31,133,000 gallons, compared with a daily average of 29,755,000 gallons in January, 1931, an increase in daily average during February of 4.6 per cent.

Gasoline consumption in 46 states and the District of Columbia for the two months ending with February, 1931, amounted to 1,794,115,000 gallons, compared with 1,654,795,000 gallons for the corresponding period of 1930, an increase of 139,320,000 gallons, or 8.4 per cent increase in daily average consumption.

The figures giving the quantity of gasoline sold or offered for sale, as reported under the various laws, follow. In some cases, they are gross figures, before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which, if paid, is subsequently refunded. All figures which are subject to revision were compiled by the American Petroleum Institute:

GASOLINE CONSUMPTION BY STATES, FEBRUARY, 1931

	Feb., 1931 gallons	Feb. 1930 gallons
Alabama	11,501,000	13,073,000
Arizona	5,256,000	6,255,000
Arkansas	10,122,000	9,277,000
Colorado	11,488,000	10,358,000
Connecticut	12,405,000	13,005,000
Delaware	2,642,000	1,743,000
District of Columbia	6,046,000	5,116,000
Florida	21,261,000	21,933,000
Georgia	15,772,000	16,691,000
Idaho	2,907,000	3,195,000
Illinois	58,461,000	57,307,000
Indiana	29,697,000	27,670,000
Iowa	26,403,000	23,980,000
Kansas	24,559,000	26,392,000
Kentucky	11,088,000	10,183,000
Louisiana	13,101,000	13,265,000
Maine	3,849,000	3,328,000
Maryland	11,650,000	10,764,000
Massachusetts	29,952,000	29,884,000
Michigan	46,269,000	47,153,000
Minnesota	24,701,000	21,249,000
Mississippi	*9,200,000	9,537,000
Missouri	31,053,000	27,351,000
Montana	4,092,000	3,457,000
Nebraska	17,695,000	14,936,000
Nevada	1,119,000	1,049,000
New Hampshire	2,787,000	2,738,000
New Jersey	35,134,000	32,626,000
New Mexico	3,422,000	3,668,000
New York	91,404,000	85,675,000
North Carolina	18,564,000	20,518,000
North Dakota	4,977,000	3,553,000
Ohio	66,749,000	60,412,000
Oklahoma	22,605,000	21,631,000
Oregon	10,961,000	9,577,000
Rhode Island	5,227,000	5,239,000
South Carolina	8,489,000	8,350,000
South Dakota	7,634,000	7,831,000
Tennessee	14,007,000	13,643,000
Texas	54,653,000	56,422,000
Utah	3,526,000	3,517,000
Vermont	1,804,000	1,697,000
Virginia	14,443,000	13,341,000
Washington	17,235,000	15,776,000
West Virginia	7,800,000	6,977,000
Wisconsin	25,718,000	21,929,000
Wyoming	2,192,000	1,653,000
Total	871,720,000	823,230,000
Daily average	31,133,000	29,401,000
Increase over previous year:		
Amount of increase	48,490,000	.....
Percentage increase in daily average	5.9%	.....

*Estimated.

ENLARGING SKIMMING PLANT

A small skimming plant at Brownwood, Tex., which was built several years ago is being remodeled by J. F. Stillwell of that city. The plant which was never operated by the original builders is expected to be in operation by June 1.

WESTERN TO DISTRIBUTE FOR BARNSDALL COMPANY

The Barnsdall Refining Co. of Tulsa has completed arrangements with the Western Oil & Fuel Co. of Minneapolis, Minn., to distribute Barnsdall products through its subsidiary companies. The contract will furnish additional outlets for Barnsdall gasoline when the gasoline pipe line of the Great Lakes Pipe Line Co. is completed to Minneapolis and placed in operation during the early summer. The Barnsdall interests are one of the stockholders in the Great Lakes line.

The consummation of this deal gives Barnsdall representative distribution in the Twin Cities, where the Western Oil & Fuel operates through its subsidiaries, the Minnesota Oil & Refining Co. and the Mileage Oil Co. Another subsidiary, the Refinery Products Distributing Co., controls and operates various jobbing companies throughout western Wisconsin, Minnesota, North Dakota and a portion of South Dakota.

The Western Oil & Fuel Co., of which H. M. Baskerville is president, is one of the largest wholesale distributors of fuel oils, distillates, kerosenes, and other refined products, in this territory. Barnsdall also operates and owns in the Twin Cities, the Petroleum Products Co., which has retail outlets and facilities for the redistribution of motor oils in the Twin Cities and surrounding territory.

CALIFORNIA STANDARD MEETING COMPETITION

LOS ANGELES, May 5.—Standard Stations, Inc., a subsidiary of Standard Oil Co. of California, has extended its new policy of meeting competition on an equal price basis to all points on the Pacific Coast. This practice of removing price tags and replacing them with signs reading "competitive prices" was inaugurated in the San Francisco Bay region several weeks ago but is now in effect at all Standard Stations. No change has been made in tank wagon prices to resellers as a result of this new move but it nevertheless results in lower prices for gasoline and may ultimately be reflected in crude and refined oil schedules as Union, Shell and other marketers have adopted similar policies.

MADE VICE PRESIDENT

J. M. Koch, elected vice president in charge of sales, Quaker State Refining Co., Oil City, Pa.

STANDARD OIL KENTUCKY MARKETING THIRD GRADE

Effective May 2, the Standard Oil Co. (Kentucky) announced introduction of "Kyso Green," the company's new competitive grade of gasoline to be sold 3 cents under the regular grade. Dealers who will handle the new grade will be loaned second-hand equipment which will be installed at the dealer's expense and the dealer's net price will be 2 cents under the service station retail price. The new gasoline will be sold for cash only and no discounts will be allowed. Likewise, no tank wagon deliveries will be made to commercial users or other consumers.

Effective June 1, the company has posted a sliding scale of discounts to be allowed which will narrow the profit to the dealer when the difference between the service station price and the tank wagon price is narrowed.

Under the new schedule the company will allow a commission of 3 cents per gallon in all territory where the retail price is 2 cents above tank wagon price; a commission of 2½ cents per gallon where the retail price is 1 cent above tank wagon price, and in territories where the retail price is the same as or less than tank wagon price, the commission will be 1½ cents per gallon.

This change does not affect leases which will continue in effect and carry a rental of 1 cent per gallon. The agency agreements only are changed.

TO FIGHT TAX EVASION

OKLAHOMA CITY, Okla., May 2.—Under the direction of the Oklahoma Petroleum Marketers Association, a war is to be waged against gasoline tax evasion in Oklahoma. According to J. R. Atchison, manager of the association, it is estimated that tax evasions of various types will total $1,000,000 yearly.

It is believed that the new enforcement law of the State which becomes effective July 1 will aid materially in preventing evasions. Particular attention is to be paid to the trucks which do not have any marks of oil companies. These trucks make many deliveries at night and it is believed that a large part of the gasoline delivered is not reported for taxation.

REVISE MONTANA RATES

Irving L. Koch, examiner of the Interstate Commerce Commission, has recommended that rates on petroleum and petroleum products, except crude petroleum, in tank car loads prescribed by Montana Board of Railroad Commissioners for application in that State, be held unduly preferential of shippers in interstate commerce and prejudicial to shippers in interstate commerce and that they be revised on a basis which will adjust the situation without preference either way. Examiner also recommended that these rates from refining points of Cody, Greybull, Casper and Glenrock, Wyo., to Montana destinations be held reasonable in their past application but unreasonable for the future.

ENLARGING REFINERY

The Kendall Refining Co. is enlarging its refinery at Bradford, Pa., with the installation of a 1,500-bbl. distillation unit. The new unit will be used to process the lubricating fractions obtained from 4,000 bbls. per day of Pennsylvania grade crude oil. The refinery operates exclusively on that grade of crude oil.

The equipment is being installed by the Alco Products, Inc., a division of the American Locomotive Co.

California's New Gasoline Law Will Improve Marketing

LOS ANGELES, Calif., May 4.—California's new gasoline tax bill became operative May 1 and sponsors of the measure believe that it will have a stabilizing effect on refined oil prices. This new bill makes it more difficult to evade gasoline tax payments and should eliminate unethical competition. A number of smaller refiners have evaded gasoline tax payments through technicalities in the original bill. Previous to May 1 it had become common practice of bootleggers and jobbers to sell a motor fuel consisting of a kerosene and natural gasoline blend. The State was duly reimbursed for sales of the natural gas used in this blend but the kerosene portion went untaxed. This permitted jobbers and resellers to consistently undersell uniform grades of gasoline because no tax was paid on the kerosene stock used.

Under the new bill effective May 1 all grades of motor fuel, including kerosene, are taxable. Another objectionable feature will be eliminated by California's new gasoline tax bill as this measure will prevent jobbers and small refiners from selling substantial quantities of motor fuel below prevailing markets and then evade payment of gasoline taxes because they have no tangible property upon which the State could expect to effect collection even in the event of a favorable court decision. Under the new order of things, refiners, marketers and jobbers are obliged to post substantial bonds to protect the State from losses due to the failure to report gasoline sales.

Gasoline sales in California during the first quarter of 1931 were approximately 14 per cent in excess of the volume for the first three months of last year. Taxes for the first three months of 1931 aggregated $9,973,312.77, an increase of $1,227,203.16 over last year. If this ratio of increase should continue, gasoline taxes in California, according to the State Board of Equalization, should be in excess of $45,200,000. In view of the existing business depression, gasoline sales in California appear to have been stimulated by prevailing low prices. At the present rate, gasoline taxes are producing $123,921 per day for road construction purposes. It is significant to

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GREAT LAKES SEASON STARTS

MUSKEGON, Mich., May 2.—The W. P. Cowan, largest tanker in the Standard Oil Co. of Indiana Great Lakes fleet, delivered a cargo of 36,000 bbls. or more than 1,500,000 gallons of Red Crown gasoline, at the Muskegon tank farm last week. It was the first visit of the tanker, which has a capacity of 45,000 bbls., or nearly 2,000,000 gallons, to the port of Muskegon. It was impossible to carry a full load into the harbor because of low water conditions.

Another tanker of the new "Stanolind Blue" gasoline is expected to arrive at the Muskegon tank farm, western Michigan distributing center for the company, within a few days as the first cargo is being sold throughout the Muskegon sales area at a rapid rate.

BUILDING SMALL PLANT

A small skimming plant is being built at Hawley in Jones County, Texas. Hawley is located a short distance north of Abilene. The plant is being built by E. W. Moutray, independent oil man of Abilene. The plant which will operate with crude oil from Jones County wells is to have a rated capacity of 1,000 bbls. daily.

EAST COAST GASOLINE MARKET IS UNSETTLED

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230,393 bbls. for the four week ended April 25. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Baltimore	60,000
Boston	155,000
New York	648,000
Philadelphia	171,000
Others	148,000
Total	1,182,000
Daily average	168,857
At Gulf Coast Ports—	
Galveston district	17,000
Total	17,000
Daily average	2,428
At all United States Ports—	
Total	1,199,000
Daily average	171,286
Daily average four weeks	230,393

Distribution of total imports is as follows:

Crude	468,000
Gasoline	243,000
Gas oil	28,000
Fuel oil	460,000

Charter Market

Continued quiet prevailed in the charter market during the past week, with the market oversupplied with tonnage and low rates prevailing.

Fixtures during the week were as follows:

Steamer Myriel (Dutch), 4,500 tons, clean, Black Sea to Sete and Antives, 9s.6d., May-June.

Motorship Strix (Nor.), 3,719 tons net, Black Sea to U.K./Continent, 7s., May.

Cities Service Missouri (Am.), 4,612 tons net, Gulf to North of Hatteras, 15 cents, May loading (clean).

Motorship Max Albrecht (Ger.), part cargo, 4,000 tons lub oil, Gulf to London and Ghent, 15s., May.

Motorship O. A. Knudsen (Nor.), 5,191 tons net, Aruba to Teneriffe, 5s.9d., May 1-15, cancelling.

VAPOR PHASE PROCESS AT ALBERTA REFINERY

(Continued from Page 124)

sary to overcome the friction of the moving oil, vapors and gases. The products from this process are three in number, a 45° A.P.I. naphtha, a 13° A.P.I. fuel oil and fixed gases.

The refinery equipment of the Coutts plant is of the most modern design. The crude oil distillation unit is a pipe still equipped with bubble type fractionating towers and efficient heat exchangers. A tower installed for the refining of cracked distillate in the vapor phase eliminates the use of acid and retains the very high antiknock rating on this type of distillate which is produced by the Leamon vapor-phase process. The complementary units are of special design and are built in with the complete Stellarene unit. They are divided into three parts, the tail gas recovery unit which extracts the more volatile crude Stellarene from the fixed gases; the "hot filter" treating unit, which eliminates the residue constituents from the crude Stellarene; and the redistillation or finishing unit, where the crude Stellarene is finally redistilled by heat exchange.

The oil is first heated to 700° to 800° F., where it is passed into a vapor liquid separator where the liquid constituents are dropped out. The vapors leaving this separator contain a very minute amount of oil in liquid phase which is vaporized by a raised temperature in a vapor dryer before entering the superheating coils, in order to prevent liquid phase cracking with consequent carbon deposits.

Entering these superheating coils the dry vapors are automatically maintained at a high temperature of 1,000° to 1,050° F. From the coils the vapors are discharged directly into the catalytic chamber where the conversion to Stellarene takes place. The source of heat for the reaction here is entirely from the superheat of the vapors, as the catalytic chamber itself is not heated.

Leaving the catalytic chamber the vapors pass through the heat exchangers to the fractionating column where the temperature at the top determines the distillation range of the crude Stellarene. The uncondensed gases, leaving the final condenser under practically atmospheric pressure, are saturated with Stellarene vapors (approximately 4 gallons of recoverable Stellarene for each 1,000 cubic feet of gas). This wet gas is returned to the tail gas recovery unit where extraction takes place.

The crude Stellarene must then pass through the complementary units already mentioned, the "hot filter" for cleansing and removing any fractions of residue and the redistillation or finishing unit.

Economical Operation

Close supervision of the Stellarene unit is not required with a resultant economy in operators because the desired operating conditions are automatically maintained throughout and failure of the controls to function properly would not be hazardous, due to the nonpressure feature of the entire process, differing radically from the common methods of refining which relies on tremendous pressure for the cracking process.

DEEP FIELD PRESENTED FEW NEW PROBLEMS

(Continued from Page 34)

ganese sheaves instead of the regular cast steel sheaves used in the fields prior to Oklahoma City.

The drillers engaged in developing Oklahoma City were mostly men experienced in rotary drilling in Seminole. In Bureau of Mines Report of Investigations 2,997 covering the Seminole area it reported that the drilling time on wells in Seminole City, Bowlegs and Little River Pools, which had an average depth of 4,259 feet, required 94 days to complete.

In an article, "Operating Problems at Oklahoma City," page 58, The Oil and Gas Journal, January 30, 1930, there is a graph showing that it required about 115 days to complete 6,500-foot wells in Oklahoma City.

The following drilling record of the two areas is interesting as it gives some idea of drilling speed and shows that there was a slightly greater speed developed in the Seminole area.

Area—	Average well depth— feet	No. wells
Seminole area	4,200	1,500
Oklahoma City	6,500	763

This tabulation shows that in 40 months in the Seminole area they drilled on an average of 35.8 miles of hole per month, while in the Oklahoma City Pool in 28 months they have drilled only 33.4 miles per month.

No Production Problems

When the Oklahoma City Pool was first opened and oil secured from a depth in excess of 6,000 feet many questions were asked about how this field would be produced when the natural pressure fell so low that mechanical means had to be used to lift the fluid to the surface.

Here again the past experience in Seminole area proved of value to the production man and engineer in the Oklahoma City Pool, for the gas lift has been successfully used in the younger pool, even to depths of 6,200 feet. Beam pumping has been tried out, and there are no mechanical reasons why it should not be used although at this time it is not economical with wells on a prorated production basis. In addition, two well-known methods of intermittent gas lift, the rodless gas operated pumping engine, and the Reda submerged electric pump have all been tried with varying degrees of success.

With high fluid levels in the limestone area the gas lift was used with good success and required from 700 to 1,000 pounds gas pressure to kick off the wells, and then about 400 pounds to flow them. When the fluid levels fell and it was necessary to lower the tubing below 3,500 feet from the surface a system of jets has been used to reduce the kickoff pressure and keep from overloading the compressors.

In two of the Indian Territory Illuminating Oil Co. wells the beam pump was tried and gave good results, but it is admitted that after the fluid was agitated there was sufficient formation gas to continue to flow the well. Other pumping tests are being tried by other companies and when it becomes economically profitable to pump wells this system will be used much as it was in Seminole but it is probable that alloyed rods and tubing will be needed.

With the Reda submerged electric pump the well was produced satisfactorily from a depth of about 2,500 feet but for greater depths it would be necessary to use a larger powered motor and it would then be only a matter of comparison of lifting costs between this and other systems as to the adaptability of this type electric pump to Oklahoma City problems.

The rodless pump which has been used very successfully in California is being tried out in several places in Oklahoma and it has been run in one well in the Oklahoma City Pool. It gave a fair demonstration on its first trial but excessive sand produced from the well caused some trouble and in pulling the pump engine out of the well it was found there was sufficient paraffin wax and oil accumulated on the sides of the 7-inch casing at about 1,700 feet below the surface to cause some trouble.

So far as known this is the first time that paraffin in quantity has been reported as accumulating inside pipe or casing in Oklahoma City wells and it was removed by swabbing, using some fresh oil above the swab to help lubricate and soften the wax.

The rodless pump gives promise of aiding in the solution of the problems of securing the balance of the oil in these deep wells. Engineers familiar with this field have no fear about securing the oil when the fluid level is low by applying any one of these methods.

Water Troubles Studied Closely

The Arbuckle lime wells, about 115 in number, have all made water in large volume, and about 34 of them have been cemented back and the lower pay formations plugged off. There are 81 wells now producing oil in the lime area, and many of the wells plugged back have been shot in the casing opposite upper formations for gas. Indian Territory Illuminating Oil Co.'s No. 1 Emerson Joyce was shot with 20 quarts of nitroglycerin a short time ago and reported to be a 140,000,000-foot gasser from a depth of 4,020 feet in the Pawhuska formation. Other wells have been shot in the lower sands such as the Prue and in the Detrital zone and have made good gas wells ranging from 20,000,000 to 70,000,000 feet.

Development period— From	To	Miles hole drilled
Mar., 1926	July, 1929	1,431.0
Dec., 1928	Apr., 1931	938.5

The sand wells that are making water are the ones that now give the operator his greatest concern for 80 of them have reported salt water showings along with the oil, although many of them have been satisfactorily repaired by cementing back. The number of sand wells that have been reported as showing water will be found to vary over a wide range on different reports for it seems that only one or two companies have attempted to keep up with this detail and the last records available from most sources were only complete up to the latter part of February.

Investigation developed the fact that water showings have been reported in many wells erroneously, for instance:

On one lease there were five wells all producing into one tank battery and in the course of several months water had accumulated in one of these tanks up to the pipe line level and had to be drawn off. This was done and the gauger then had to account for this loss of space in the bottom of this tank and charged 40 bbls. of water to No. 1 well of the group, where as a matter of fact this well never has made any salt water, and the water actually drawn from the tank was not salty. But the well did appear on a scout report for a time as making 40 bbls. of water.

In other wells water has broken through and been reported but check has shown that it was not salt water but drilling water that had penetrated some formation and had later been able to break into the hole and come to the surface with the oil and it was carried as a water well for a time. No repair was necessary on such a well and the water quickly drained out of the formation and the well produced oil only thereafter.

The true water situation is well known to all of the major companies and they are keeping a very careful check on the sand wells and analyzing all water promptly as it comes from the well.

As the whole of the Arbuckle lime structure is full of salt water and some of this structure lies above the producing sand formations which occur along the flanks of the old Arbuckle hills the hydrostatic head of this salt water in some wells is actually greater than the hydrostatic head in the oil and water in the downdip sand wells.

As it was common practice in completing the earlier wells in the Arbuckle lime with the 6⅝ or 7-inch string of casing set quite high above the producing horizon, considerable open hole was exposed and up into this open hole water has since made its way. From such uncased holes it is possible for the water to make its way downdip into the same formations adjacent to the Arbuckle lime and when they reach a well in the sand this water may run into it from above.

This type of water trouble can best be remedied by adopting special proration schedules for the remaining 81 Arbuckle lime wells, and permit them to take the balance of their oil as quickly as possible. It is estimated that this limestone area has made about 12,000 bbls. per acre and will only make about 14,000 bbls. total, or about 2,000 bbls. more per acre.

On this basis there should be about 1,620,000 bbls. of oil still in the Arbuckle lime area or about 20,000 bbls. per well if they are all spaced one well to 10 acres.

It is further proposed that when this remaining production has been secured that the whole of the Arbuckle lime area be completely plugged back to such levels as will insure a shutoff of water. With the now known facts about the geological formations of this pool this seems to be a very logical suggestion and if put into practice will insure the sand wells of protection against this "top" water menace.

Bottom Water in Sand

In addition to this top water it is known that many wells in the Simpson sand area have water in the bottom of the hole. This formation is known as the "Lower Simpson" and lies on the flank of the old Arbuckle limestone hill and the Oklahoma Geological Survey's Bulletin No. 40 says it is 490 feet thick.

Wells that have been drilled into the "pay" in this formation for the most part produce from what is known as the "Johnson" sand that is the next to the lowest member making up this 490 feet of structure. Between the bottom of the Johnson sand and the flank of the Arbuckle hill is a limestone formation known as the "Stamper lime." Some geologists hold the theory that this Stamper thins and thickens very rapidly over the two areas at least, and in these areas or zones there seems to be the main bottom hole water movement.

These zones are each about 1 mile wide and extend from southeast to northwest with an area between them that does not have any appreciable number of water wells.

Considering these wells making water from the Johnson sand and Stamper formations it has recently been found upon a close re-check of well samples that there is a very porous stratum or zone in the upper part of the Stamper lime, where lime and sand seems to be so mixed as to produce this open condition.

It is thought that much of this water movement is through this porous stratum for it is known that immediately below the Stamper lime the Arbuckle forma-

tion, upon which it rests, is full of water and as oil and gas is removed it will be replaced by this water which is apparently under higher hydrostatic pressure than the rock pressure of the oil and gas.

It is also known that in drilling in many of the holes were carried through the Johnson sand and well into this Stamper lime and this would present another avenue for Arbuckle water to escape from that structure and work upward into the well.

It is also held by some geologists that the Stamper lime is practically missing at the bottom of this lower Simpson section in some wells and this brings the Johnson sand directly in contact with the Arbuckle lime, and a well drilled deep into this Johnson sand horizon might prove a means for Arbuckle water to make its escape, as the well pressure is reduced through withdrawal of oil and gas.

Cement plugs have been placed in the bottom of many of these sand water wells with good success and water shutoff accomplished. In others the cement plugs have been successful for a time only when water has later broken in again.

In some wells it has been necessary to cement three or four times, adding each time as little as 10 or 15 feet of plug and trying to secure water shutoff without cutting off too much of the sand from which the oil is coming.

Water Troubles Controlled

On April 25 there were 763 wells completed in the Oklahoma City Field in both the lime and sand areas, with 51 drilling and 50 locations. The classification of lime wells varies over a rather wide range but if it is accepted that 115 wells were drilled into the Arbuckle formation this will mean a total of 648 sand wells completed with 101 drilling and locations or a total when they are finished of 749 sand wells. There will be other locations made in the sand areas which have not as yet been defined to the west and northwest or north but has been outlined on the south by three water wells in the Wilcox formation.

The field has produced about 55,000,000 bbls. of oil to date. The more conservative observers familiar with this whole situation place the ultimate recovery at from 175,000,000 to 200,000,000 bbls. of oil. This is partly based upon the conditions that exist in the NW of Section 2-12n-3w where the unit operations were carried on.

This area is undoubtedly a thick producing sand zone and the Wilcox there is well charged with oil, but if every care is not exercised in taking this oil from this formation much of it will be cut off by water encroachment. These operators may not be willing to follow the advice of experienced petroleum engineers and production men which would be to produce this oil slowly and make prompt repairs in case water does show up in this sand. If this is not done many wells will be ruined and much of the potential production lost.

Every large operator in the field has assigned an engineer or production man to this water problem and is using every known means of holding this menace in control and it is believed they will be able to retard movement of bottom water quite materially. If all operators will cooperate the Oklahoma City Pool should make an ultimate recovery of around 200,000,000 bbls. of oil and will produce for some time to come, just as Seminole is still making a lot of oil even though it was freely predicted that the life of that field would be short when water first made its appearance there.

TEST IN SOUTH DAKOTA

WALL, S. D., May 2.—Gypsy Oil Co.'s wildcat test, located in the C NE SW, Section 28-3n-16e, Pennington County, on a large block of acreage was preparing to spud. The crew was laying water lines and expected to be able to spud by the middle of the week. Gov. Warren Green was extended an invitation to be present. The acreage was assembled last fall and winter.

INTERESTING CONVENTION PLANNED BY GAS MEN

(Continued from Page 30)

areas as great trunk lines are carried to regions hundreds of miles from the source of supply and formerly regarded as quite beyond the reach of pipe lines.

Leslie B. Denning, Jr.
Lone Star Gas Co.

Vast natural gas pipe line systems already completed or in contemplation make it easy to visualize a day not far distant when these lines will stretch from the Atlantic to the Pacific, carrying an ideal fuel to the remotest corners of the country.

Deeper Drilling Creates New Problems

As the drill is sent to deeper and still deeper levels in the search for oil and gas, higher well pressures are encountered, and this has placed upon the shoulders of the engineer and the equip-

H. J. Hoover

ment manufacturer the task of devising machinery and methods that will prevent wells from getting out of control with the attendant danger of ruining not only the well but perhaps the whole field. Although there is still disturbing waste of natural gas in some fields, the alarm sounded by leaders in the industry has been followed by conservation measures that promise eventual stopping of this leak. Furthermore, it is believed that the more important natural gas reserves are passing into the hands of men who will insist upon their orderly and economical development, in contrast with haphazard procedure of other years. In all such phases of the business the annual meetings of men directly interested in the adoption of scientific methods and appliances have had a vital part in the progress recorded.

Entertainment features for both men and women have not been overlooked in the Memphis convention program. These include an old-fashioned southern barbecue, sightseeing trips, golf, cabaret banquet, theater party, wrestling bout, ball, luncheon and musicale and a bridge luncheon.

Committees in Charge

The following committees are in charge of the convention preparations:

General arrangements—W. J. O'Brien, chairman, Memphis, Tenn.; B. C. Adams, Kansas City, Mo.; J. B. Corrin, Pittsburgh, Pa.; H. L. Dickerson, Houston, Tex.; Edgar G. Hill, New York, N. Y.; Alfred Hurlburt, Chicago, Ill.; William Moeller, Jr., Los Angeles, Calif.; J. R. Munce, Shreveport, La.; F. F. Schauer, Pittsburgh, Pa.; D. C. Shaffer, Memphis, Tenn., and T. R. Weymouth, New York, N. Y.

Major Alexander Forward
Managing Director, American Gas Assn.

Program—E. F. Schmidt, chairman, Dallas, Tex.; W. A. Dunkley, Memphis, Tenn.; L. Fitzpatrick, Salt Lake City, Utah; T. H. Kerr, Columbus, Ohio; J. H. Maxon, Omaha, Neb.; A. E. Merchant, New Orleans, La.; H. L. Montgomery, Bartlesville, Okla.; W. B. Trammell, Houston, Tex.; George Wehrle, Denver, Colo., and W. S. Yard, San Francisco, Calif.

E. J. Stephany
Secretary, Natural Gas Dept., A. G. A.

Publicity—Paul Renshaw, chairman, Memphis, Tenn.; J. C. Barnes, New Orleans, La.; William C. Grant, Dallas, Tex.; C. D. Greason, Kansas City, Mo., and R. S. McBeth, Tulsa.

Hotels—J. J. Brennan, chairman, Memphis, Tenn.

Reception—W. N. Ford, chairman, Memphis, Tenn.

CALIFORNIA'S NEW LAW WILL IMPROVE MARKETING

(Continued from Page 146)

note that major refiners and the larger progressive independent refiners recorded substantial increases in gallonage during the first quarter of this year. This will be more evident on subsequent returns as the gallonage of major companies has shown a tremendous increase resulting from the existing policy of meeting competition on an equal price basis. The Standard, several weeks ago, removed its price tags at a number of its stations and replaced them with a tag reading "competitive prices." The Shell followed the Standard a day or so later with signs announcing "meeting competition." This practice only prevailed at competitive stations or in localized areas where independent stations were dispensing cut rate gasoline.

Major Refiners' Increase

It is significant to note that all of the major refiners in California, with the exception of Richfield Oil Co., reported sharp increases in the volume of gasoline sales during the first three months of the current year. Increases, ranging from 7,000,000 to a little more than 9,000,000 gallons for the quarter, were scored by Standard, Union, Associated and General Petroleum.

The largest volume of increase was registered by the Standard Oil Co., with increased sales of 9,192,787 gallons for the quarter, and the largest percentage of gain was achieved by the Rio Grande Oil Co., the sales of which were 95 per cent in excess of last year. Displacement of Richfield Oil Co. was a feature of the sales report for the first three months of 1931. Sales of the company dropped 9,235,970 gallons, or approximately 26 per cent below last year.

COLOMBIAN LAW IS DECLARED TO BE UNFAIR

(Continued from Page 32)

even when operations may be on private property.

Article 13, while providing for exemption from certain taxes, is complained of because it is asserted its language should have been broadened to provide that no new taxes should be imposed even by the nation.

Article 18 requires the contractor to begin exploitation within a definite period, without any provision in the law to the effect that before the exploitation period shall begin the government must first grant approval for pipe lines.

Article 25 is regarded as onerous because it obligates the contractor to deliver gratis to the government his installations and elements in good condition, and in "perfect condition for production," as well as to sell to it the remainder of his property upon termination of contract.

Under Chapters 4 and 5 any unfavorable view the ministry might take of a land title would inevitably result in a summary suit. As titles cannot be passed on administratively, a favorable opinion would not lead to a decision which would lend any force to the title, and every minister will send all documents to the court, even though they may be perfect and complete. So that in any case there will be a summary suit, which will greatly add to the work of the court, and such action may run for years.

Still Face Possible Actions

Even though the owner win the summary suit, he would still face for an indefinite period the common law actions which the government may institute, not perhaps immediately but after oil has been discovered, and installations, pipe lines, etc., completed, whereby the detriment is greater. If the owner loses the summary suit, he loses his legal position and has to start an ordinary action to recover. When an owner has contracted with an operator for exploitation, the increase in payments which must be made to the government, upon the owner's losing his suit in court, unjustly falls on the operator, who is left out of any contract between the government and

the defeated owner. The option of making such a contract is nominal.

Upon the legal position of the owner and occupant being thus reversed, 95 per cent of the privately owned oil lands in Colombia would be debarred from oil production.

Under Chapter 11 procedure is so complicated and formalities are so many that no contract, it is said, may ever be perfected, particularly since it must go to the consulting board. It is also said that there should be no right on the part of the government to prevent a private owner from taking aerial photographic maps of his private property, nor obligating him to give a free copy to the government when the work has been very costly to him.

The Colombian law is extremely complicated in that it leaves many uncertainties. It comprises about 10,000 words. Because of the abundance of petroleum in many parts of the world, the Colombian government is expected to find that there are many places in which oil companies may operate with much more assurance of success than in Colombia.

TEXAS CRETACEOUS WELLS SHORT LIVED

(Continued from Page 32)

Petroleum Development and Technology, A.I.M.E., by H. B. Hill and Chase E. Sutton, entitled "Summarized Engineering Report on the Powell Field, Navarro County, Texas, With Special Reference to Water Problems and Corrective Work" will prove of value.

In this article the authors describe in detail the conditions existing in the Powell Pool at the time of their investigations, and of the successful work done in well plugging on various properties, the result of which was a largely increased oil recovery. From a study of several hundred well logs and the records of coring data was obtained on which recommendations as to cementing depths were based. A supervising driller was placed in the field to keep in touch with the repair work being done and to aid the operators desiring his services.

Plugging back bottom hole water by use of lead wool is described in Report of Investigations 3,059.

A cartridge container, approximately 30 inches long and with a diameter varying according to the size of the casing in which it is to be run, is constructed of wire netting. Each cartridge container is packed with about 125 pounds of lead wool, attached to the drilling tools, and is lowered to the bottom of the hole. The lead wool is tamped down with the tools until it fills the hole about 8 inches, and the operation is repeated until the hole is plugged to the proper depth. In some wells more than 2,000 pounds of lead wool is required for this type of plugging operation. Care must be exercised in filling the cavities and properly tamping the lead wool opposite a shell or hard streak in the formation to assure a successful job.

Producing History of Fault Fields

The production history of the three Woodbine fields, including the number of producing wells, acreage, estimated ultimate recovery and the recovery per acre is given below:

ESTIMATED OIL RECOVERY, WOODBINE FAULT FIELDS

Field—	Maximum number of producing wells	Probable proved acreage	Estimated total ultimate recovery, bbls.	Acres per well	Approx. ultimate recovery per acre, bbls.
Powell	*827	2,600	110,000,000	3.1	42,000
Wortham	322	745	23,000,000	2.3	31,000
Mexia	544	3,700	94,000,000	6.8	25,000

*Includes wells producing from Woodbine sand and shallower depths.

The Report of Investigations 3,059 outlines methods of controlling water in those fields along the fault lines that are under discussion and quotes the following from R. Van A. Mills' article in the April 18, 1929, issue of The Oil and Gas Journal, which is equally applicable to the conditions in the East Texas pools:

"The best method of water control is to conserve as much of the natural gas pressure in the reservoir as is consistent with the profitable production of oil under either competitive or co-operative methods."

FIGHTERS FACE GREAT OBSTACLES IN TEXAS FIRE

(Continued from Page 137)

found within 50 feet of the flames on Saturday morning when H. H. Bunch, a plucky worker and helper of Floyd Kinley made the discovery, the body burned beyond recognition, but was identified by Glenn Harroun who recognized a bunch of keys that Murdock carried in his pocket.

Bunch a Heroic Worker

Bunch was one of the several men who applied for work fighting the fire Friday morning. He was persistent in his demands for a job, and was finally given it, proving himself to all his fellow workers and the men of the Sinclair Oil & Gas Co. who were supervising the work, as an unusual worker, with plenty of nerve and stamina. While the older Kinley was hurt it was Bunch who went in with Floyd Kinley to carry on the work near the flames, and he did not once stop until Kinley stopped, working over 30 hours without sleep.

The camera man went in here to get a close-up of the Kinley brothers at work. They can be seen bending over to fasten drag line hooks to machinery to be drawn away by tractors and trucks. The man in the foreground is a welder.

Veteran Fire-Fighters

Many of the men showed the spirit which might have marked them as old-timers at the fire-fighting game, but really there were only two men on the job, the two Kinley brothers, who had risked their lives many times before in subduing conflagrations. M. M. Kinley, the older of the two brothers, said that the first experience he had of fire-fighting was in 1913 in the old Midway Field, California, when he was a boy. At that time all he did was look on as his father bossed the job, for Kinley's father was also a veteran fire-fighter and was his two sons' instructor.

M. M. Kinley stated that he had snuffed out about 50 fires, his first real job having been in the Cromwell Field, Oklahoma. The Oil and Gas Journal carried a complete story of that fire and Kinley's work. F. P. Kinley has been working with his brother for the past five years, and when Myron went down under the chain-guard with his leg broken by the heavy weight, the younger brother was the one who waved for help, and fought like a demon to extricate "Mac." It was F. P. who carried on the work after his older brother had been taken to the hospital at Longview, and who carried on later under the direction of his brother's orders which were issued as the latter hobbled about on a crutch, or sat in the shade on a cot watching to see that the men did not take too many chances, and that they did the work with the least possible danger, and in the most efficient manner.

Signs of Salt Water

On Friday signs of salt water showed up in the well, shooting out from the well's torch, spitting jets of steam which gradually grew in number and volume, until on Saturday clouds of steam could be seen coming from the flames, practically proving that the well might have drilled itself deeper into the sand as it blew out into the fiery air, and that salt water was coming up the hole with the oil. Kinley said the water was increasing because the heat from the well was growing more intense, making it tougher on the workers. The question is, will the fire be shot out before more water encroachment performs the task of subduing the flames? It looks doubtful at the present time with the amount of oil now spouting out of the casing and swivel, making the heat most intense, but if the water increases to 50 or 75 per cent it will cut down the great volumes of oil and consequently cut down the fire and heat, giving the fighters a better chance to get in their cutting work on the Kelly and swivel. But the Kinley brothers aim to snuff out the blaze before such an amount of water is produced, and Tuesday morning they expected to place the first shot in an effort to snuff out the fire. Tuesday afternoon, May 5, at 4:45 the well will have burned seven days and nights, and will have nine lives marked up against it.

Victims of Fire

The following are the names of the men who were working for the Loffland Drilling Co. and Sinclair Oil & Gas Co. who lost their lives by the explosion and fire: Frank Wolz, Hunter, Okla.; W. H. McCaslin, Jr., Wynona, Okla.; W. H. McCaslin, Sr., Longview, Tex.; George Albright, Ray Blankenship, Seminole, Okla.; William Harroun, Canadian, Okla.; Frank Feiock, Longview, Tex.; John Keyes, Oklahoma City, and Robert Murdock, Orlando, Okla.

Hughes Fire Cost 13 Lives

J. K. Hughes Development Co.'s No. 1 McKie in the Joseph Broyles Survey, in the Powell Field, Navarro County, still holds the record as the greatest man-killing well in Texas, and possibly in the country, for when it suddenly caught fire it burned 13 men to death. This happened in 1923. The well burned for 46 days, and when finally subdued and shut in flowed 5,200 bbls. the first 24 hours. The Sinclair well now on fire is no doubt about five times as large a producer as the Hughes well, consequently is a tougher proposition for the men fighting it, but they have the advantage of new and up-to-date equipment to help them in the work, have many years of fire-fighting experience and knowledge, and consequently will no doubt bring this burner under control in less time than it took to control the Hughes well.

MAIN OBSTACLE AT BURNING WELL REMOVED

FORT WORTH, Tex., May 5.—The Kelly joint on the Sinclair Oil & Gas Co.'s burning well, No. 1 Cole, in Gregg County, has been unscrewed and the Kinley brothers expect to be able to snuff out the fire with a charge of explosive before the end of the day.

MURRAY COMMITTEE DRAFTS COMPACT

(Continued from Page 29)

I have no confidence in any help from the Federal Government. No legislature will ratify a compact, as proposed. Our governor thinks proration will do no good except to the big four oil states."

"Leave the advisory committee alone to work out its proposals and then let the legislatures work on them, we do not want proration as conducted in Texas," W. Scott Heywood of Louisiana said.

Governor Sterling recommended the new conservation commission law, now being allowed to die in the legislature, on request of the oil states advisory group.

Defends Texas

C. V. Terrell, Texas railroad chairman, who joined the two-to-one vote to raise East Texas oil proration from an original 90,000 bbls. to 160,000 bbls., replied to criticisms of the Texas order.

"We were enjoined in court," he explained. "To get proration at all we had to do it by agreement. If the legislature or the proposed compact can prevent courts from enjoining the commission, I would like to know how to do it Proration is deeper on Texas potential than any other State."

Senator Tom Pollard said proration of the Van Field was first at only 1 per cent, and is now only 2 per cent of potential.

"East Texas is willing to be prorated if equably with the rest of the country," he said.

Mr. Neale demanded something definite to take back to Arkansas for home consideration. He said his State was being prorated by price. Legislative assistance is necessary and his legislature "would not swallow something it did not understand," so he would expedite the rough draft of the plan for study.

This was the first legislative meeting on the oil program, and the oil states advisory subcommittee session followed others of the advisory group in Fort Worth, Texarkana, St. Louis and Washington.

Delegates Present

Delegates present included: Speaker Irving C. Neale, Fort Smith; Representative Carneal Warfield, Eudora; Representative Carroll Hollingsworth, Arkansas oil states advisory member; Representative Marcos Proctor and assistant Attorney General Pat Mehaffy, from Arkansas; Thurman Hill, Public Service Commission, Topeka, Kans.; C. M. Cox, Cheyenne and John G. Marzel, state geologist, from Wyoming; V. S. Welch, Artesia, from New Mexico; W. H. Cooley, oil states advisory member, from California; Northcutt Ely, representing the Federal Oil Conservation Board; W. M. Downing, oil states advisory member, from Colorado; Cicero I. Murray, oil states advisory member, from Oklahoma; W. Scott Heywood, representing Gov. Huey P. Long, Louisiana; Gov. Ross S. Sterling, Attorney General James V. Allred, chairman, C. V. Terrell of Texas Railroad Commission, Senators Walter F. Woodul, Walter C. Woodward, Pink L. Parrish and Tom Pollard, and Representatives V. B. Gilbert, A. M. Howsley, A. P. Johnson, J. R. McDougald, E. H. Lasseter and Walter Beck, and R. R. Penn, Texas oil states advisory member named by Governor Sterling, and railroad commissioners Pat M. Neff and Lon A. Smith, representing Texas.

PRAIRIE DELIVERIES

The Prairie Pipe Line Co. reports crude oil deliveries for the month of April of 2,324,660.74 bbls., a daily average of 77,489 bbls.

AWAIT UPTURN IN REFINED MARKET

(Continued from Page 28)

Coast states who are no longer posting prices at stations, adjusting their prices from day to day to meet competition.

Improvement Uncertain

It is improbable that conditions in the refinery tank car market on gasoline will improve until there is evidence of stability in the retail end. With their gallonage decreasing and their operating margin becoming less and less each week, cut-price station operators are constantly seeking lower priced material from refiners. Several refiners who have been selling this class of trade are not in a position to refuse the demands, for the volume of their business has been reduced and they are forced to accept lower quotations in order to get business. It is freely predicted in the trade that this situation will either shortly force another reduction in crude oil prices or several of the smaller refinery operators will be forced to shut down their plants due to operations which have shown consistent losses for a period of several months.

However, it is not only the smaller refiners and the spot market that is suffering due to price reductions in the consuming markets. The contract situation is equally as bad and this is of direct importance to practically all the larger refiners. When the third grade was introduced many refiners with contracts were hoping that the regular white grade, particularly in the Standard of Indiana would not be reduced for it is on this grade that most contracts with jobbers are based. However, with some companies refusing to adopt a third grade and reducing their regular grade to meet the third grade price the Standard has reduced its Red Crown price and many refiners are holding the "sack" in a manner that makes them envious of the refiner who is getting the prevailing spot price for his gasoline.

These jobber contracts vary as to their terms, some of them guaranteeing the jobber as high as 6½ cents under the service station price at point of consumption with local protection. In the extreme cases if the contracts are being carried out, the refiner is not only giving the jobber his gasoline but is also paying most of the freight from the refinery to the bulk station. A majority of these contracts look bad at this time and it is assumed that where possible the seller will take advantage of the cancellation clauses. Many of these contracts extend over a year and cannot be cancelled by the seller.

Tulsa furnishes another example of the ridiculous workings of the various types of contracts at this time. Early this year some of the major distributors entered into an agreement with retail station operators guaranteeing them a 5-cent margin. With the regular grade selling at 11 cents including a 5-cent tax, the bulk station distributor now has 1 cent a gallon to cover bulk station operation, freight, evaporation, refinery operation and crude oil costs. One operator sarcastically points to this as a "representative example of how money is being made in the oil business at this time."

It is obvious that conditions such as now prevail cannot continue over any long period of time. All sellers are hoping that conditions in the retail and crude oil production end can be improved so as to permit a fair tank car market for gasoline during the summer months.

Gasoline and Naphtha

On Monday and Tuesday the U. S. Motor grade of gasoline was sold by three or four refiners as low as 2¾ and 2⅞ cents and the same grade was being quoted in competing areas at that figure, basis Group 3. Other refiners were quoting a low of 3 cents with a price range up to 3½ cents. Refiners who have reduced their prices at retail stations and who are furnishing jobbers with a third grade reported a good movement. Otherwise, the demand was slow.

The third grade of gasoline being sold is generally the U. S. Motor grade or better. Several refiners report inquiries from jobbers who want to buy a cheaper grade. These inquiries come from jobbers who have been operating cut-price stations and others who want a cheap third grade to meet competition. There is little that the refiners can do in supplying this business. The U. S. Motor grade is usually the lowest price material available. A few refiners and blenders are furnishing a blend of naphtha and natural gasoline. Where conditions are favorable such a blend can be made as much as one-half cent under the price for U. S. Motor gasoline. So far as the principal refinery grades are concerned the main difference lies in the knock rating and not the distillation range. Cases are cited where refiners have supplied an exceptionally low antiknock gasoline under the general market.

There is a fair demand for 400 to 420 endpoint cracked gasoline of high antiknock rating. This usually commands at least one-fourth cent above the U. S. Motor price. However, where knock rating is not a factor, the 60-62 400 endpoint grade has been sold in Oklahoma the past week as low as 3 cents. The 390, 375 and 350 endpoint grades are priced upward one-eighth to one-fourth cent for each grade.

Natural Gasoline

The buying necessary to push natural gasoline prices up to the U. S. Motor range is yet to come into the market. Many manufacturers are frankly disturbed as to the probable future of their products. Present prices represent a loss of from 2 to 4 cents a gallon and some of the manufacturers fear that refinery buyers will continue to stay out of the market indefinitely.

There does not appear to be anything in the manufacturing or marketing side which will prevent natural gasoline prices from obtaining their usual relationship to refinery gasolines when conditions become normal again.

The market in recent months has suffered severely due to the decline in the participation of foreign business by refiners and marketers in this country. At the same time due to more or less general policy of "sell everything and buy nothing" on the part of refiners there has not been the usual volume of purchases in the domestic market. Some manufacturers reported more buying the past week and it is believed that this business will increase over the month. Prices are unchanged with all grades available at 1½ cents except the A grade which is quoted at 1¾ cents.

Kerosene and Distillate

The consumption of kerosene has increased in the agricultural areas. Some refiners have a ready demand for their output and in a few cases at least have bought from other refiners. The 41-43 water white grade is generally quoted at 2½ to 2¾ cents with usually not more than one-eighth cent premium for the higher gravities. Some resale material has sold as low as 2¼ cents.

The distillate market is largely in the hands of the buyers. Quotations on the several grades were not changed in this week's issue. However, occasional sales of the higher gravity grades at 2 cents or less are reported.

Fuels and Gas Oil

Spot trading in fuels and gas oils is exceptionally slow. Bargain material makes its appearange on the market from time to time but otherwise the buyers are not interested. The grades ranging from 60 to 90 cold test are practically unsalable regardless of gravity or price. One sale of 24-26 high cold test fuel oil from Oklahoma City crude oil at 20 cents a barrel was reported. The lower cold tests are in better shape and prices are unchanged. Gas oils are available depending on grade over a price range of 1 to 1½ cents.

Lubricants

Sellers would welcome more business in lubricants and wax. Trading is along routine lines at prices which are below the cost of production. In the neutral oils and bright stocks the demand is strongest for the low cold test material.

REFINERS HOLD CRUDE RUNS TO DEMANDS

(Continued from Page 33)

Altitude Petroleum Corp. plant in Chanute, formerly the Peerless refinery.

North Louisiana and Arkansas

In both Arkansas and North Louisiana, the refinery crude runs during May will be slightly lower than those for April. The status of the operating and shutdown plants remains the same and no new plants are reported building. Some impetus was given this area in the middle of April, to the running of more East Texas crude because of the greater availability of the crude at reduced prices and the lowering of freight rates. This has been discouraged in the meantime, however, because of the inability of the local market to absorb more refinery products and also because there has been a gradual stiffening in the East Texas crude market.

REFINERY OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs May 1	Runs Apr. 1
Bayou State Refining Co., Hosston	750	750	500
Crystal Oil Refining Co., Shreveport	14,000	(*)	(*)
D'Artois Oil Refining Co.	50	25	25
Louisiana Oil Refining Co., Shreveport, Bossier	19,000	16,000	18,000
Spartan Refining Co., Shreveport	10,000	8,500	8,000
Stanolind Oil & Gas Co., Superior	3,500	2,550	2,800
The Texas Company, Shreveport	7,000	(*)	(*)
Total	54,300	27,825	29,325

*Shut down.

REFINERY OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs May 1	Runs Apr. 1
James H. Berry & Sons, Waterloo	2,000	1,000	1,000
Henry H. Cross Co., Smackover	6,000	4,000	4,000
Houston Oil Co., Camden	6,000	3,100	2,750
Kettle Creek Refining Co., Pearson	5,000	2,000	2,000
Lion Oil & Refining Co., El Dorado	12,000	6,500	6,700
Macmillan Petroleum Products Co., Norphlet	1,800	1,500	1,430
Ouachita Valley Refining Co., El Dorado	2,000	1,250	700
Root Refining Co., El Dorado	10,000	4,700	6,500
Simms Oil Co., Smackover	3,000	2,800	2,750
Union Asphalt Co., El Dorado†	.....	.....	.....
Total	47,800	26,950	27,830

*Shut down. †Reduces residuum purchased from Lion Oil & Refining Co. to asphalt. No crude run.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs May 1	Runs Apr. 1
Allstate Refining Co., Thrall	3,000	1,800	1,700
American Refining Properties, Wichita Falls	6,000	3,300	3,500
Archer Refining Co., Megargel	1,500	300	600
Atlantic, Pacific & Gulf Refining Co., Wichita Falls	5,000	(*)	5,000
Beacon Oil & Refining Co., Friars Switch	2,500	300	600
Central Texas Refining Co., Angus	4,000	600	600
Continental Oil Co., Wichita Falls	6,000	3,300	3,300
Dale Oil & Refining Co., Electra	4,000	2,800	2,342
Deer Oil Corp., Brownwood	3,000	(*)	(*)
Dixon Creek Oil & Refining Co., Kings Mill	3,500	3,500	3,000
East Texas Refining Co., Henderson	6,000	2,500	2,000
East Texas Refining Co., Longview	3,000	3,000	.....
Empire Oil & Refining Co., Gainesville	5,000	3,800	3,600
Falls Refining Co., Wichita Falls	2,000	800	800
Gulf Refining Co., Fort Worth	10,000	6,000	5,632
Humble Oil & Refining Co., Breckenridge	2,000	700	600
Humble Oil & Refining Co., Chilton	4,000	990	1,000
Humble Oil & Refining Co., Boggy Creek	5,000	1,100	1,000
Iowa Park Producing & Refining Co., Iowa Park	2,500	(*)	1,500
Kent Refining Co., Minerva	2,000	700	634
LaSalle Petroleum Co., Burkburnett (Noble)	3,500	(*)	1,500
Macmillan Petroleum Co., Isom	8,000	6,000	6,000
Magnolia Petroleum Co., Fort Worth	12,000	4,500	4,500
Magnolia Petroleum Co. (White Eagle plant), Fort Worth	6,000	4,000	4,000
Magnolia Petroleum Co., Corsicana	5,000	4,600	4,500
Marathon Oil Co., Fort Worth	5,000	4,000	3,500
Muenster Refining Co., Muenster	300	75	(*)
Olney Oil & Refining Co., Olney	2,500	2,100	2,000
Oriental Oil Co., Dallas	5,000	1,000	1,000
Panhandle Refining Co., Wichita Falls	5,000	3,400	3,325
Petroleum Refractionating Co., Pampa	6,000	6,000	5,250
Phillips Petroleum Co., Isom	15,000	10,000	10,000
Primrose Refining Co., Wichita Falls	2,500	2,500	2,000
Simms Oil Co., West Dallas	4,500	4,000	4,000
Southland Refining Co., Olney	1,000	200	200
Star Refining & Producing Co., Fort Worth	1,500	1,000	750
Superior Refining Co., Tiffin	2,000	200	200
Tarrant Petroleum Co., Grand Prairie	2,500	(*)	(*)
Taylor Refining Co., Taylor	6,000	3,000	3,300
Taxman Refining Co., Wichita Falls	2,500	1,500	1,500
The Texas Company, Dallas	16,000	15,000	15,000
The Texas Company, Amarillo	4,000	3,000	3,000
Tidal Western Refining Co., Burkburnett	3,000	1,500	1,200
Texas Pacific Coal & Oil Co., Fort Worth	3,000	2,000	1,800
Texas Pacific Coal & Oil Co., Caddo	1,000	500	450
Waggoner Refining Co., Electra	3,400	1,300	1,700
Wilcox Oil & Gas Co. (Pampa Refining Co.), Pampa	4,000	2,000	2,000
Total	210,450	119,365	120,694

*Shut down.

WORK ON BOZEMAN LINE

CASPER, Wyo., May 2.—The Ohio Oil Co. awarded the contract for pipe requirements for its pipe line from the Dry Creek Field in southern Montana to Bozeman, Mont., to the A. O. Smith Corp. of Milwaukee, Wis. The pipe will consist of 30-foot joints 10-inch diameter, double bell connections. Contract for stringing the pipe has been awarded to Weadick & Utzinger.

The Ohio company established its first operating camp near the town of Roberts. Work has been under way on the river crossings; laying two 10-inch lines across the Yellowstone River has been completed. There are three more river crossings—Boulder, Stillwater and Rock Creek.

The trunk line will be 113 miles long with laterals to a number of towns. The estimated cost is $2,500,000. It is expected that the system will be completed by early fall.

LOCKPORT LINE

HOUSTON, Tex., May 4.—Union Sulphur Co. is laying a 4-inch line from the Lockport Field, Calcasieu Parish, Louisiana, to its Rose Bluff tank farm and terminal on the Calcasieu River, near Lake Charles. The line is 3 miles long and will provide an outlet for the company's production in the new west extension of the Lockport Field. This company also has important production at Sulphur Dome, and in Calcasieu Parish, which is connected with the Rose Bluff tank farm by a 6-inch line, 18 miles long.

COMPANY REPORTS REFLECT CONDITIONS

(Continued from Page 144)

said, "now that the governors of the various oil producing states have been converted to the idea of a state compact. When the Secretary of the Interior, at Colorado Springs over a year ago, advocated that plan and called a meeting, there was strenuous opposition, but the people who then opposed it are now behind the effort. We failed to get, as we had hoped to get, full co-operation among the states and with the Federal Government. There is now that encouraging condition to look forward to, and in my judgment it is the most logical solution of our problem."

There were 6,483,997 shares of the capital stock represented at the meeting, or approximately 66 per cent of the 9,351,163 shares entitled to vote, which is about the usual representation at the annual meetings. The personal attendance represented 294,517 shares. The meeting was short, no questions being raised by stockholders.

Pierce Petroleum

At a meeting of Pierce Petroleum Corp. it was stated the management intended to dissolve the corporation and distribute its holdings of Sinclair Consolidated Oil Corp. common to stockholders as soon as income and excess profit taxes now in controversy between the Government and the corporation had been disposed of or settled. Stockholders approved reduction in capital of the company to 2,500,000 no-par common shares eliminating the 11,000 shares of preferred stock which have been retired.

Ohio Oil

Ohio Oil Co. has omitted quarterly dividend of 25 cents on common due at this time. Regular quarterly dividend of $1.50 was declared on preferred payable June 15 to stockholders of record May 16.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

Sept. 10	42.84	Jan. 7	27.56
Sept. 17	42.43	Jan. 14	27.31
Sept. 24	40.62	Jan. 21	27.55
Oct. 1	37.78	Jan. 28	27.26
Oct. 8	35.85	Feb. 4	27.26
Oct. 15	35.21	Feb. 11	28.76
Oct. 22	31.58	Feb. 18	28.53
Oct. 29	32.80	Feb. 25	29.33
Nov. 5	31.77	Mar. 4	27.67
Nov. 12	30.18	Mar. 11	26.53
Nov. 19	31.54	Mar. 18	26.78
Nov. 26	30.86	Mar. 25	26.35
Dec. 3	30.53	Apr. 1	24.80
Dec. 10	28.57	Apr. 8	25.52
Dec. 17	25.42	Apr. 15	24.72
Dec. 24	25.68	Apr. 22	22.73
Dec. 31	26.15	Apr. 29	20.54

UNIVERSITY OF TEXAS LAND LEASING BILL

AUSTIN, Tex., May 2.—The new university oil land leasing bill re-enacts the requirement that there shall be a "demand" for the purchase of any leases before they are offered by the university leasing board.

The bill increases to 6,000 acres the individual units which may be sold, and gives the board the option of the previous sealed bids or of competitive bidding at auction for the sales.

Separate bids are authorized for each tract offered for leasing.

The law specifies that no bid may be accepted which offers the university a royalty of less than one-eighth of both the oil and the gas, and the minimum royalty may be fixed at a higher figure. Annual rentals of not less than 10 cents per acre in advance are required for each year of the lease except such years in which the previous year's royalties have exceeded the rental payments.

Leases may be awarded or rejected, but can be made only to the highest bidder.

The new law provides that leases may be assigned in units of not less than 40 acres. When oil or gas is brought in in paying quantities, this will continue the life of a lease for as long as production lasts.

DRILLING ACTIVITIES IN EASTERN CANADA

CHATHAM, Ontario, May 2.—In the Dawn Field, Lambton County, Ontario, Union Natural Gas Co.'s No. 58, SW, Lot 11, Concession 1, Dawn Township, is drilling at 725 feet. Union's No. 59, NW, Lot 24, Concession 2, is rigging. In the old Tilbury Field, Kent County, Southern Ontario Gas Co. has a test drilling in Lot 10, Concession 12, Tilbury East Township. In Mosa Township, Middlesex County, Southern Ontario Gas Co.'s No. 8, SE, Lot 14, Concession 3, is drilling around 500 feet.

In Haldimand County, Union Natural Gas Co.'s No. 192, Lot 18, Concession 1, Walpole Township, has drilled in with around 19,000 feet of gas. Union's No. 194, Lot 22, Concession 7, Walpole, and Union's No. 195, Lot 8, Concession 5, Rainham Township, is drilling. In Norfolk County, Union Natural Gas Co.'s No. 193, Lot 17, Concession 5, Woodhouse Township, is drilling in.

Pelee Island Deep Test

In Essex County, Ontario, Ed Winter of Leamington and Judge Myers of Detroit with associates are reported arranging for a deep test of the Trenton limestone. Shallow tests have been drilled on Pelee Island on several occasions. Attention was first attracted to this area about 35 years ago by the presence of crude oil on pools and ditches on the John Finlay farm. Some years later Finlay interested a group of oil men, and a test was drilled to between 700 and 800 feet, encountering some gas and fair shows of oil. A number of wells were drilled to the same depth, and for some time the field yielded a small commercial production, which failed to hold up. This shallow production apparently came from the Onondaga and corniferous lime. Pelee Island is in Lake Erie, almost opposite the old Essex gas field. Some deep tests have been drilled on the main land of Essex County, without securing production in the Trenton, but none close enough to Pelee Island to afford conclusive evidence as to the possibilities.

Producers Urge Tariff

A meeting of the Crude Oil Producers Association of Ontario, held at Petrolia recently, appointed a delegation to wait on the federal government with reference to securing tariff on imported crude. The delegation comprised William McIntosh, representing the Petrolia Field; A. W. Parks, representing Oil Springs producers, and J. W. G. Winnett of London, for the Bothwell Field. The producers' proposal is that the government impose a tariff of 1 cent per barrel on imported crude while importers buying Canadian crude be required to pay a premium. The price of the Canadian product to be based, as at present, on the price of crude at Lima, Ohio, plus transportation charges to Sarnia of 40 cents per barrel. The proposal would provide for payment of $120,000 per year to Canadian producers, and approximately $160,000 a year to the government. Prior to 1903 a tariff of 5 cents per gallon was imposed on imported crude. In that year a government bounty of 1½ cents a gallon was substituted for the tariff production. This bounty was discontinued in 1925. Crude oil is at present admitted duty free.

DOMESTIC EXPORTS OF PETROLEUM AND REFINED PRODUCTS

	Month of March		3 mos. ended Mar.	
Petroleum:	1930	1931	1930	1931
Crude ..... Bbls.	1,944,158	1,585,639	5,482,604	5,214,795
Crude ..... $	2,445,750	1,443,605	7,278,066	5,466,664
Total refined petroleum ..... Bbls.	11,321,900	6,513,269	31,583,165	23,191,275
Total refined petroleum ..... $	41,026,949	18,958,111	119,779,858	65,573,731
Gasoline, naphtha and other refined products ..... Bbls.	5,789,338	2,840,809	15,920,761	11,089,254
Gasoline, naphtha and other refined products ..... $	24,378,497	8,425,990	68,392,644	32,794,824
Oils, illuminating ..... Bbls.	1,729,844	1,150,974	4,865,355	3,400,421
Oils, illuminating ..... $	6,769,950	3,378,521	19,622,756	9,910,238
Gas and fuel ..... Bbls.	3,079,578	1,977,028	8,598,876	6,915,679
Gas and fuel ..... $	2,922,664	1,915,056	8,617,394	6,414,251
Lubricating ..... Bbls.	704,788	536,980	2,454,637	1,760,899
Lubricating ..... $	6,621,917	5,137,624	22,648,506	16,121,932
Other refined petroleum ..... Bbls.	18,352	7,478	43,536	25,012
Other refined petroleum ..... $	263,921	100,920	598,558	332,486
Paraffin wax ..... Lbs.	20,075,198	30,466,677	71,293,859	76,029,700
Paraffin wax ..... $	805,275	969,358	2,845,427	2,383,545

CHICAGO LINE TO RAISE VALLEY BETWEEN PEAKS

CHICAGO, May 4.—The natural gas pipe line from the Texas Panhandle to Chicago will apparently take care of potential demand in this district for some time to come.

The line will have a capacity of 175,000,000 feet of gas a day, handled at a pressure of 600 pounds a square inch. It could therefore deliver close to 64,000,000,000 feet a year if necessary. As against this figure Peoples Gas Light & Coke Co. sold last year 42,845,000,000 feet of manufactured gas which has a lower heating value than natural gas, which will be mixed with the present product to produce a gas with a heating value about 50 per cent higher than now obtains. In other words, Peoples Gas could sell much less of the new mixed gas and still secure the same heating effect as with manufactured gas in 1930. While natural gas from Texas will be sold in the Chicago metropolitan area as well as in Chicago proper, the aggregate demand now in sight seems well within the capacity of the line.

Natural gas is scheduled to arrive in Chicago toward the end of 1931, and a resultant greater use of gas for house heating and for commercial and industrial operations is likely to raise the "valleys" between periods of peak demand, thereby bringing nearer "24-hour and all-year-round stabilization and lower rates."

NEW DERRICK ERECTED AT LOS ANGELES SHOW

Another derrick is being erected at the Permanent Oil Equipment and Engineering Exposition in Los Angeles on the outside space east of the main building. It is an all steel type which incorporates a newly patented design. Considerable interest in derrick design has been shown by foreign visitors who are giving considerable study to this subject. Both this new derrick, which is under construction by the Petroleum Derrick Co., and the Ideco derrick, erected before the second annual exposition, will present valuable data on derrick design and construction to the visitors throughout the year. Over 100 manufacturers of oil equipment are now showing their products in the main building. Many of the displays are set up for operation and both W. J. Blankenship and Vic Knoth, who are in charge of the showing of equipment to visitors, have familiarized themselves with all the various pieces of machinery. They are thus able to give the visitors a complete service and can show the actual operation of equipment to all who are interested. The appearance of the permanent exposition has been greatly changed since the second annual show recently concluded. Not only are there many more exhibits but nearly all are well decorated and a more complete line of equipment has been set up.

SEEK TO REOPEN OIL PHASE OF RATE CASE

Claiming that conditions have radically changed since the Interstate Commerce Commission held its hearings on oil rates in the general rate structure investigation, the Gulf Refining Co. and the Pure Oil Co. are seeking to have the case reopened in so far as it applies to the oil industry.

In their petition the two companies point out that crude oil is selling at 15 to 20 cents per barrel in the East Texas fields and this development is of primary importance in determining the oil rate structure.

"If these factors are to be accorded weight in the determination of a proper level, the record should be reopened in order to permit proof to be made of present conditions," the brief states. "So far as the opposed prosperity of the industry is considered as an indication of ability to bear excessive freight rates, it is a myth and it is of utmost importance, in order that just conclusions may be reached, that the case be reopened to permit the introduction of testimony concerning the condition of the industry."

ENORMOUS NEW WELLS IN RUSK AND GREGG COUNTIES SWELL OUTPUT

Enormous new wells in the Rusk-Gregg area in the East Central Texas district in April brought initial production of the wells completed east of California up to 1,666,284 bbls. from 502 new oil wells. There were also 375 dry holes completed and 152 new gas wells, a total of 1,029 completions, an increase of 134 over the April number.

Drilling operations outside a few flush fields continued to drop and 21 fewer rigs and 147 fewer drilling wells are shown as compared with the March record.

Following are the figures:

SUMMARY OF ALL FIELD WELLS COMPLETED

Field—	Comp.	Prod.	Dry	Gas
Eastern	90	77	24	38
Central Ohio	31	26	11	15
Lima	9	160	1	6
Indiana	11	75	6	1
Michigan	8	496	2	3
Illinois	0	0	0	0
Missouri	1	0	1	0
Kentucky	66	3,348	24	11
Oklahoma	129	217,891	46	26
Kansas	33	7,853	7	11
Texas Panhandle	23	5,989	4	7
N. Central Texas	93	2,159	68	8
E. Central Texas	242	1,381,888	29	4
West Texas	33	3,502	16	0
Southwest Texas	89	8,941	62	5
East Texas	12	0	11	1
Gulf Coast	80	25,863	16	0
North Louisiana	27	590	12	8
Arkansas	11	943	4	1
Mississippi	11	0	7	4
Wyoming	9	1,377	0	1
Montana	4	0	4	0
Colorado	4	200	0	2
New Mexico	3	5,412	0	0
Total April	1,029	1,666,284	375	152
Total March	895	485,020	348	182
Difference	134	1,181,264	27	30

RIGS AND WELLS DRILLING

Field—	Rigs	Drlg.	Ttl.
Eastern	40	142	182
Central Ohio	34	100	134
Lima	6	24	30
Indiana	6	55	61
Michigan	63	103	166
Illinois	3	22	25
Kentucky	12	129	141
Missouri	0	1	1
Tennessee	0	18	18
Alabama	2	3	5
Mississippi	7	19	26
Oklahoma	80	300	380
Kansas	31	132	163
Texas Panhandle	16	51	67
North Central Texas	20	171	191
East Central Texas	44	156	200
West Texas	13	120	133
Southwest Texas	14	110	124
East Texas	12	31	43
Gulf Coast	13	121	134
North Louisiana	22	57	79
Arkansas	7	31	38
Wyoming	14	86	100
Montana	10	59	69
Colorado	14	71	85
New Mexico	8	47	55
Utah	0	20	20
Total April	491	2,179	2,670
Total March	512	2,326	2,838
Difference	21	147	168

COMPARISON OF GUM TEST METHODS FAVORS STEAM OVEN OVER AIR JET

By J. C. Molitor
Chemist, Vacuum Oil Co., Paulsboro, N. J.

Data recently presented by Oscar C. Bridgeman and Elizabeth W. Aldrich, of the Bureau of Standards (published in The Oil and Gas Journal, January 29, 1931), gave conclusions which are entirely in accord with those arrived at in research work at the Vacuum Oil Co. laboratories on the gum problem to the effect that values by different methods do not agree with one another. These authors, however, have not given any data on one of the important methods, the steam oven method, and it seems of interest to present some comparative data on a group of gasolines tested for gum content by the air jet and the steam oven methods.

The technique used in the air jet method is essentially the same as that used at the Bureau of Standards with the exception that the rate of air flow was always near the maximum which could be employed without blowing some of the gasoline out of the dish.

The steam oven method employed is a modified form of that proposed by Cooke (see Bureau of Mines Report of Investigations No. 2686, 1925) . The oven was maintained at 165° C. by means of a thermostatically controlled external electrical heating unit. Dry steam was passed through the oven. Fifty cubic centimeters of gasoline were transferred to a glass dish of about 75 cc. capacity by means of a pipette. The dish was then placed in the oven for 16 hours, time found sufficient to bring the gum deposited to constant weight. The dish was then removed, placed in a desiccator for 30 minutes and weighed to 0.1 mg. Chemical cleanliness of the apparatus was closely observed and extreme care was exercised in the determination by both methods.

TABLE A—COMPARATIVE DATA BY AIR JET AND STEAM OVEN METHODS IN MG./100 CC.

No.	Air jet	Steam oven
1	212, 210	75, 72
2	194, 188	106, 109
3	*160, 161	37, 37
4	151, 160	54, 53
5	152, 139	84, 80
6	146, 144	72, 76
7	*133, 121	36, 36
8	123, 115	33, 32
9	*122, 115	38, 39
10	*115, 108	33, 35
11	*104, 113	51, 44
12	*101, 94	30, 25
13	98, 96	47, 46
14	*96, 91	68, 68
15	95, 93	27, 26
16	*93, 91	14, 14
17	90, 86, 89	40, 45, 42
18	93, 86	24, 20
19	88, 82	34, 36
20	86, 81	17, 10
21	78, 72	17, 17
22	72, 69	31, 33
23	67, 65	15, 16
24	67, 61	25, 24
25	51, 58, 53, 56, 53, 52	27, 23, 24, 25, 25, 24
26	*55, 56	13, 15
27	52, 50	10, 10
28	50, 51	21
29	*49, 46	16, 16
30	*49, 51	13, 13
31	*46, 41	15, 15
32	*44, 38	10, 9
33	41, 41	9, 9
34	42, 42	16, 16
35	42, 38	14, 16
36	*38, 36	21, 22
37	29, 28	9, 10
38	20, 19	4, 4
39	12, 11	4, 5
40	10, 10	4, 4

*These values also appear in Table B.
Average deviation from mean values: Air jet, 2 mg., steam oven, 1 mg.

TABLE B—DATA ON 50 PER CENT BLENDS, RESULTS IN MG/100 CC.

No.	Air jet	%	Steam oven	%
1	160, 161		37, 37	
1B	91, 93	57	14, 14	38
2	133, 121		36, 36	
2B	55, 56	44	13, 15	39
3	122, 115		38, 39	
3B	49, 51	42	13, 13	34
4	116, 108		33, 35	
4B	49, 46	43	16, 16	47
5	113, 104		51, 44	
5B	41, 46	40	15, 15	32
6	101, 94		30, 25	
6B	44, 38	42	10, 9	35
7	96, 91		68, 68	
7B	36, 38	40	21, 23	32

Gum content of the 50 per cent blend is 44 per cent of the original by air jet, 37 per cent by the steam oven.

Data were obtained by each method with 40 gasolines of various gum contents, and the results are presented in Table A. Three things are apparent from these comparative findings:

1. The results by the steam oven method are very much lower than those obtained by the air jet method.

2. There does not appear to be any definite relation between the results by the two methods. Roughly the values by the steam oven method are 35 per cent of those obtained by the air jet method.

3. Each method is satisfactorily reproducible with a slight advantage to be credited to the steam oven method.

Data were also obtained by both methods upon several gasolines and their 50 per cent blends. The samples were prepared by diluting a very high gum content gasoline with gum free gasolines. The 50 per cent blends were made by diluting the sample with an equal volume of the same gum free gasoline. The results are shown in Table B. Samples marked with a B are a 50 per cent blend of the gasoline immediately above it.

Discussion of Results

A very interesting point can be brought out by referring to Figure 6 of the paper by the bureau investigators (cf. The Oil and Gas Journal, January 29, 1931). Here the zero intercept (a′ of the equation $\frac{100G}{V} = a' + b'V$) represents the gum content of the sample in question corresponding to instantaneous evaporation. This intercept, a′, will also represent the "true gum content" of the gasoline if the effect of the variables, temperature, atmosphere, etc., are sufficiently convergent to be extrapolated.

From the evidence presented in Figure 6 we note that there seems to be a general relation with respect to the zero intercept a′. Namely that a′ is two-thirds of the air jet value obtained when 50 cc. of the sample are evaporated. Applying this factor (two-thirds of the air jet value at 50 cc.) we can get the zero intercept of each of the 40 gasolines of Table A. In each case this value, presumably "true gum content," is much higher than the steam oven value for the same gasoline. It follows then that the expected convergence of the variables does not take place and the values obtained at the zero intercept do not represent "true gum content" values when obtained by the air jet method. The data presented by Bridgeman and Aldrich together with that of Tables A and B, tend to show that the steam oven method comes nearer to giving "true gum content" values than any of the other methods presented.

LEGAL

Department of the Interior, Washington. Call for bids to Purchase Royalty Oil and Royalty wet gas accruing to the United States from the North Dome, Kettleman Hills, California, oil and gas field. Pursuant to the provisions of Section 36 of the act approved February 25, 1920 (41 Stat., 437), sealed proposals, in duplicate, will be received in the office of the Secretary of the Interior, Washington, D. C., on or before noon on June 1, 1931, from responsible bidders for the purchase, for a period beginning July 1, 1931, of all royalty oil and of all royalty wet gas accruing to the United States from Government lands in the North Dome, Kettleman Hills, California, oil and gas field. Information as to the approximate quality and quantity of the oil and wet gas offered for sale may be obtained from the Director, Geological Survey, Department of the Interior, Washington, D. C., or the Supervisor, Geological Survey, Taft, California. Bids are invited on six separate items as follows: Item 1.—Royalty oil for the period beginning July 1, 1931, and ending March 31, 1932. Item 2—Royalty oil for the period beginning July 1, 1931, and ending March 31, 1934. Item 3—Royalty oil for the period beginning July 1, 1931, and ending March 31, 1936. Item 4—Royalty wet gas for the period beginning July 1, 1931, and ending March 31, 1932. Item 5—Royalty wet gas for the period beginning July 1, 1931, and ending March 31, 1934. Item 6—Royalty wet gas for the period beginning July 1, 1931, and ending March 31, 1936. Bids for oil must be a differential stated in cents per barrel over the average monthly field price received for all other oil produced in said field by the Kettleman North Dome Association, and bids for wet gas may be stated either as a flat rate in cents per thousand cubic feet or as such flat rate plus a differential in cents per gallon of gasoline content. Delivery of royalty oil and royalty wet gas will be made in the field by the Kettleman North Dome Association without cost to the Government to the successful bidder or for his account. Payments for the royalty oil and royalty wet gas are to be made to the Register of the United States Land Office, Sacramento, California, on or before the fifteenth day of each month following that in which delivery is made. The quantity and quality of the oil will be determined by tests, corrected for impurities, and the volume computed in terms of standard barrels at 60° F.; the quantity of gas will be determined by orifice meters using a standard pressure base of 14.73 pounds per square inch and standard temperature of 60° F., and the gasoline content of gas will be determined by standard charcoal or other tests satisfactory to the Government. Each bidder must submit with his bid a bond in the sum of $1,000 or a certified check payable to the order of the Secretary of the Interior in the sum of $1,000 as a guarantee that he will, if successful, promptly execute a satisfactory contract and furnish a bond in the sum of at least $100,000, conditioned upon full and complete compliance with the terms of the contract. The Secretary of the Interior may accept the offer of the highest bidder and/or bidders and reserves the right to reject all bids whenever within his judgment the interest of the United States demands. Sealed bids are to be submitted to the Secretary, Department of the Interior, Washington, D. C., the envelope to be marked plainly "Bid on Kettleman Hills royalty oil" and/or "Bid on Kettleman Hills royalty wet gas." No bid received after the time herein fixed for submitting bids will be considered. (Sgd.) Ray Lyman Wilbur, Secretary of the Interior. April 23, 1931.

BILL FARRAND WANTED NO FUSS AT WEDDING, BUT SEE WHAT HAPPENED

W. H. Farrand, formerly petroleum engineer for The Texas Company at Signal Hill, Calif., and recently promoted to superintendent of the South Mountain district, Santa Paula, didn't want any fuss or excitement over his wedding. And the girl, Miss Sue Adams of Long Beach, felt the same way about it. So Bill dropped in at the office of the Martin-Decker Corp., Long Beach, where everybody knew him like a brother, confided that on account of being transferred to Santa Paula he and Miss Adams had decided to get married right now, and suggested that the desire for quiet and privacy could be met wonderfully if the Martin-Decker airplane would take them to San Diego for the marriage ceremony. The enthusiasm with which the suggestion was received touched Bill's heart.

Bill, Miss Adams and Bill Gross, the best man, got into the plane with the pilot. A can of white paint got in, too, but only the pilot knew that. When the bridal party got out in San Diego the pilot improved his time by painting a wide variety of arresting signs on the plane—on the side opposite the entrance, of course.

In the meantime, The Texas Company office had been tipped off that the plane bearing the newlyweds would be back at a certain time, with the result that a teeming mob was on hand, along with a newspaper photographer. Privacy? Bill concealed his feelings and stood beside the bride for the picture which, all unknown to the victims, took in the startling inscriptions done by the pilot and his can of paint. What Bill thought when he discovered the signs could not be put into words.

It looked as though the ordeal was over at last when two Long Beach cops in a big car with a moaning siren pulled up, took a look at the frank pronouncements in white paint and forthwith put handcuffs on Bill. They started him and his bride on the way to the county jail in Los Angeles, but on arriving at the Martin-Decker establishment they admitted they might have made a mistake and released their prisoners. There was another mob at this point. Eats and an armistice followed.

NOT DUMPING RUSSIAN KEROSENES IN CHINA

NEW YORK, May 4.—Dumping of Russian kerosene in Chinese markets through an alliance between the Soviet Oil Trust and the Kwangwha Co., reported imminent a few weeks ago, is being withheld, pending the resumption of formal Chinese-Russian commercial relations. Until these relations have been formally reopened, the Chinese Government has ruled it illegal for any Chinese company to enter into contracts with Soviet interests. The Soviet oil trust is reported to have reached an agreement with the Kwangwah Co. for the marketing of considerable kerosene and other refined products at price levels which will afford extremely sharp competition to American and European companies now active in China.

Soviet extension of marketing activities in other world markets, however, continues on an expanding scale. The Soviet recently landed a cargo of 40,000 cases of gasoline and 20,000 cases of kerosene at Santos, Brazil, and further shipments are reported on the way. Soviet oil, which recently entered the South African market on a large scale, is being marketed there at prices under those quoted by American and European sellers.

HANDBOOK ON OIL BURNING

Information of practical value to the oil man whose work requires a familiarity with oil-burning heating or power equipment is contained in the "Handbook of Oil Burning" just published by the American Oil Burner Association. In addition to authoritative information, charts, descriptive illustrations and tables relating to every phase of the oil burner industry, the book also contains a thorough treatise on oil, its sources, modern methods of refining, production, heat characteristics, comparative fuel costs, etc. A wealth of general information such as the chemistry of combustion and flame, fundamentals of heat and heat transfer, and the determination of heating capacity requirements also is included.

Printed in pocket size for convenience, the new handbook contains 629 pages including 123 tables and 358 illustrations and charts spread over 24 chapters. It can be had ($3) at the association headquarters, 342 Madison Avenue, New York.

NEW STEAM FLOW CONTROLLER

The Campbell Engineering Co., 282 South Street, Newark, N. J., announces it is prepared to furnish a steam flow controller for oil stills similar in design to its "Pumpkinseed" type but in larger size, suitable for temperatures up to 800° F. Stainless steel calibrated orifice nozzles with correction factor will serve for moderate variation in temperature of steam. This concern is best known to the oil industry as manufacturer of the "Pumpkinseed" and "Watermelon" steam flow controllers for oil stills and the Tar Baby oil burner for burning fuel oils, water gas, tar, acid sludge, and residue fuels. Grant Campbell, president of the company, is the inventor of the "Campbell" boiler feed water regulator manufactured and sold by the Atlas Valve Co., and used in refineries.

"ALLEGHENY ALLOYS" ADOPTED

The Allegheny Steel Co., to reduce the confusion in the alloy field resulting from the large number of trade names used, will use the name "Allegheny" in connection with all its products. The whole group of chromium and chromium-nickel alloys made by the company will be known as "Allegheny alloys." The name of Allegheny metal, the 18 and 8 alloy, will remain unchanged, but the alloys hitherto bearing the name of Ascoloy will be known as Allegheny 33, 44, etc., using the same differentiating numerals that are now used with the word Ascoloy. This action followed a survey which showed there were 104 different trade names in the alloy field in this country.

Effect of Change-Over to Natural Gas

A.G.A. Subcommittee Deals With Results Upon Consumption, Revenue, Unaccounted for Gas, Service and Hazards

By George Wehrle
Public Service Co. of Colorado, Denver, Colo.*

The American Gas Association's subcommittee on conversion from manufactured to natural gas acknowledges the very comprehensive report of the 1930 committee on the study of factors involved in the change-over from manufactured to natural gas, of which W. D. Burk of San Antonio, Tex., was chairman. This report was so thorough in all of the phases of the subject covered that it may well serve as a textbook. This year's subcommittee has used Mr. Burk's report as a foundation, simply elaborating upon certain details and bringing the subject down to date.

It is recognized that in view of the completion within the year 1931 of certain major natural gas pipe line projects, the subject dealt with by this subcommittee is a pertinent one to a large number of gas companies that may be saved a great deal of pioneering work through information regarding the experiences of those gas companies substituting natural gas for manufactured gas in recent years. The object of this report is then to disseminate up to date information regarding the more important phases of this work so that a duplication of the efforts expended by those who have been the pioneers may not be necessary.

While this report will touch upon all factors involved in changing from manufactured to natural gas, five major topics have been chosen for discussion, namely:

1. Effect of natural gas upon consumption.
2. Effect of natural gas upon revenue.
3. Effect of natural gas upon unaccounted-for gas.
4. Effect of natural gas upon service.
5. Effect of natural gas upon hazard.

A questionnaire was sent to all subcommittee members asking for complete and up to date information on the above topics, and this report embodies the experiences of the gas companies in Los Angeles, San Francisco, Oakland, New Orleans, Atlanta, Memphis, Salt Lake City, San Antonio, Muskegon, Denver and others.

Success of Change-Over

The success of the actual physical change-over depends largely upon the preparation or extent of planning done. Those companies which pioneered this work in recent years experienced long months of planning, careful checking and rechecking of plans, training of personnel, campaigns of publicity and customer education, and finally culminating it all in a relatively short campaign of appliance adjustment.

The first companies to undertake this work in recent years had little to guide them and initiated the plans that have since been successfully used in numerous cities. By the interchange of ideas, the dissemination of information from actual experiences, and through the lending of men, other companies have been assisted in their change-over work.

It is believed that enough companies have now gone through change-over programs and there is available, through articles and reports that have been published, sufficient information that such work may be considered well standardized at this time. In addition, there are several thousand men who have had actual experience in change-over work. These men are pretty well scattered over the country and may be available as supervisors, or for the training of personnel. Men from the Denver company have supervised and assisted in conversion work for other companies in Salt Lake City, Utah; Albuquerque, N. Mex.; Greeley, Colo.; and Sedalia and Springfield, Mo. Other companies have had similar experiences.

Factors to Be Considered

This subcommittee recommends that the following factors be given consideration in conversion programs:

1. The division of the city into districts in order that natural gas may be turned into one district at a time while other districts may use manufactured gas. The districts should be of such extent that the crews will be able to complete the adjustments in a period of time not to exceed one week.
2. Thorough training of a large enough group of men for adjustment work so that the largest district of the city may be covered in one week.
3. A publicity campaign should be carried on to keep customers fully informed at all times.
4. The use of a universal adapter similar to that manufactured by Anderson & Forrester of Denver, Colo., rather than the peening of orifices to a smaller size.

Effect of Natural Gas Upon Consumption

It was found that the consumption of gas per domestic customer decreased immediately following the introduction of natural gas to an extent approaching but not reaching the precise inverse ratio of heating values of the manufactured and natural gases. The trend of the effect upon consumption has been followed in this report through the experiences of companies located in different parts of the country. This information is contained in Tables 1 and 2. Due to the lower price per B.t.u. of natural gas, in most cases, the consumption took a sharp upward turn until the average consumption per customer of manufactured gas was exceeded. The trend is more pronounced in cities located in latitudes where residence heating gas is sold in large quantities. No information has been gathered relative to information regarding sales of industrial gas which is considered to be largely a question of individual conditions, although of extreme economic value.

Effect Upon Revenues

The effect of natural gas upon revenue is a function largely of the rate used. This report will not consider rates, leaving that subject to the proper rate committees.

The experiences of those companies that have changed from manufactured to natural gas are shown in Table 3.

Effect Upon Unaccounted-for Gas

It has been quite definitely proved by experience that when untreated, dry natural gas is distributed through mains and services in which manufactured gas was formerly used, the detrimental effect upon unaccounted-for gas is immediate and severe. This is due to the drying out of joint and valve packing and of deposits formerly sealing holes in pipes. In one city where dry natural gas was introduced five years ago, the unaccounted-for started to increase immediately, and in one year's time, the loss per mile of 3-inch for a 12-month period had increased 500 per cent. Extensive leakage survey work was done, resulting in the leak-clamping of all cast iron main joints. The effect was to reduce unaccounted-for to 200,000 cubic feet per mile of 3-inch main per year, whereas the amount of money spent was approximately 15 per cent of the value of the distribution system. In another city, where there was no cast iron pipe in the system, the unaccounted-for increased 300 per cent after dry natural gas was introduced. This was all leakage in steel pipes caused by the drying out of deposits, thereby unsealing existing holes. The unaccounted-for in this town was also brought down to a normal volume by extensive surveys and repairs. The experiences of these two cities are given to indicate that the effect of dry natural gas is approximately the same regardless of the kind of pipe of which the system is composed, presuming that the steel pipe is in the usual unprotected or improperly protected state.

Moisture Hunger

A great deal of experimental work has been done in different companies in the past three years in the treatment of dry natural gas before distribution with water vapor and oil fog to relieve the gas of "moisture hunger" and thereby prevent leakage through the drying out of joint packing and sealing deposits. The result of this work has shown a degree of success so far that is indicative of economy over other methods. The procedure of resaturation has not been as simple as it appears and a lot of experimental work has been required. Even at this time, the subcommittee is not ready to say that the work has been completed, although a fair degree of satisfaction has been attained, and it has been determined that resaturation, to be successful, must begin at the outset of natural gas use.

In Table 4 is shown unaccounted-for per mile of 3-inch main per year before and after natural gas use, indicating the effect produced by natural gas. Methods of treatment of the gas are also shown.

It has been found that the extensive use of natural gas for residence heating purposes has made it difficult to determine actual monthly loss that might be attributed to leakage. This is due to the lag in sales from month to month, occasioned by continuous meter reading and billing, and a stated terminating date of gas delivery. Fluctuation in temperatures may cause a variation in unaccounted-for gas from one month to another, amounting to as much as the total net gas for the entire year. We find that the curve for unaccounted-for per mile

*Before American Gas Association Distribution Conference, Cincinnati, Ohio.

TABLE 1—CONSUMPTION PER DOMESTIC RATE CUSTOMER

Company—	A	B	C	D	E	F	G	H	I	J	K
Last full year manufactured gas—M.C.F.	45.70	24.00	40.80	29 60	35 70	37 00	35 15	40.18	42.60	47.80	20.40
First full year natural gas—M.C.F.	39.70	56.90	86.60	37 45	62.90	41 30	28.90	28.90	30.17	46.11	16.18
Second full year natural gas—M.C.F.	49.50	131.30	132.50	.....	68 20	.....	41 26	34.43	33.95	44.02	15.23
Third full year natural gas—M.C.F.	.....	176.50	163.20	.....	.....	.....	.....	.....	35.10	46.41	.....
Fourth full year natural gas—M.C.F.	.....	199.90	169.30	.....	.....	.....	.....	.....	40.01	46.34	.....
Fifth full year natural gas—M.C.F.	.....	192.20	.....	.....	.....	.....	.....	.....	40.26	.....	.....
Natural gas introduced	1928	1925	1926	1929	1928	1929	1928	1928	1922	1927	1928
Location of company	(*)	(*)	(*)	(*)	(*)	(*)	(†)	(†)	(†)	(‡)	(§)

*Rocky Mountain states. †Southern states. ‡Pacific Coast states. §Middle West.

TABLE 2—IMMEDIATE EFFECT—CONSUMPTION PER DOMESTIC RATE CUSTOMER

Company—	A	B	C	D	E	F	G	H	I	J	K
First full month's use natural gas—M.C.F.	1 83	1 60	2.28	2.68	1.91	3.63	2.15	....	2.60	6 07	....
Corresponding month preceding year mfg. gas—M.C.F.	3.76	2.10	3.40	2.76	2.90	3.30	3.05	....	4.29	5 59	....
Ratio manufactured gas to natural gas use	1.95	1.31	1.49	1 03	1.56	.93	1.42	*1.77	1.65	92	†1.50
Ratio natural gas to manufactured gas heating vale	2 50	2.00	2.50	2.17	2 50	2.28	1.83	1.63	1.73	1.29	1.85
Natural gas turned on	6-23-28	12-9-25	7-7-26	9-28-29	6-21-28	9-30-29	12-31-28	8-28-28	11-29-22	4-5-27	9-4-28
Conversion completed	8-3-28	12-23-25	7-31-26	9-3-29	7-12-28	10-20-29	1-17-29	9-5-28	12-21-22	8-4-28	10-3-28

*Ratio of total domestic sales for months of October, 1927 and October, 1928. †Ratio of total domestic sales for months of November, 1927, and November, 1928.

TABLE 3—REVENUE PER DOMESTIC CUSTOMER

Company—	A	B	C	D	E	F	G	H	I	J	K
Last full year manufactured gas	$33.25	$24.00	$57.50	$38.20	$51 89	$45.39	$39.84	$50.45	$45.52	$34 24	$33.70
First full year natural gas	35.80	41.30	58.10	40.00	50 20	36.92	29.07	29.40	27.44	43.15	24 90
Second full year natural gas	40.45	65.50	78 90	.....	53 30	.....	38.20	34 68	31.76	42.28	25.80
Third full year natural gas	.....	83.50	93.80	.....	.....	.....	.....	.....	32.91	43.12	.....
Fourth full year natural gas	.....	93.60	97.50	.....	.....	.....	.....	.....	32.70	43.06	.....
Fifth full year natural gas	.....	92.60	.....	.....	.....	.....	.....	.....	38.43	.....	.....

TABLE 4—UNACCOUNTED-FOR GAS PER MILE OF 3-INCH MAIN PER 12 MONTHS

Company—	A	B	C	D	E	F	G	H	I	J	K
Last full year manufactured gas	266 94	190 00	280.00	107.60	596.99	314 00	260 00	323.10	239.10	460.80	85.30
First full year natural gas	216 09	736 00	1,865.00	253 00	648 44	377 00	796 00	357.00	631.90	518 60	266.00
Second full year natural gas	207.29	935.00	835.00	.....	396 04	.....	850.00	408.00	803.90	544.00	269.00
Third full year natural gas	.....	575 00	385.00	.....	.....	.....	.....	.....	879.40	472.40	.....
Fourth full year natural gas	.....	409.40	310.65	.....	.....	.....	.....	.....	1,001.50	495.20	.....
Fifth full year natural gas	.....	138.75	.....	.....	.....	.....	.....	.....	1,082.00	.....	.....

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of 3-inch main for the 12 months ending, that with the normal manufactured gas load is a reliable indication of the trend of losses, becomes an erratic curve with extremely wide fluctuations when a heavy househeating load is encountered. It will be found to vary quite consistently with the degree-day curve plotted monthly. We believe this is a matter to be referred to the unaccounted-for subcommittee for study and also referred to the accounting committee for their aid in studying billing methods leading toward re-establishment of unit standards for unaccounted-for gas that will indicate consistent values to operators.

Effect Upon Service

It has been quite clearly indicated by the experiences of numerous companies that the introduction of natural gas does not immediately relieve operators of trouble from stoppages and other forms of customer complaints. As a matter of fact, on account of the different characteristics of natural gas, in the first year of natural gas use may be experienced the maximum number of complaints. Deposits of naphthalene and dust seem to shift around to some extent regardless of what may be done and the increasing loads occasioned by the addition of house heating customers disclose stoppages formerly existing and unknown.

The treatment of the natural gas with water vapor and oil fog has been found highly beneficial in mitigating the drying out and consequent shifting of deposits, and it is hoped ultimately methods employed will practically prevent this trouble.

Effect Upon Hazards

The effect of natural gas upon hazard of operation may be due principally to three causes:

1. Lack of moisture.
2. Lack of odor.
3. Wider range of explosiveness.

Treatment of dry natural gas before distribution with water vapor and oil fog and with a practical and penetrating odorant has mitigated the two former causes to practically an equivalent standard with manufactured gas. No experience is available regarding a change in the range of explosiveness to reduce hazards of explosions, but it is believed the risk from this cause is greatly less than from dry gas or odorless gas.

There is a complete absence of toxic compounds, particularly carbon monoxide in the natural gas generally distributed. This reduces the hazard to life very materially under manufactured gas use. Deaths from carbon monoxide poisoning from unburned gas, due to accident or intent, have been practically eliminated where natural gas is used. The products of combustion of either gas may contain carbon monoxide so that proper precautions must be observed in natural gas consumption by ventilation and otherwise. Due to the fact that more natural gas is generally used for heating, the volume of carbon monoxide formed in the products of combustion of the gas burned in a given city may be materially increased over manufactured gas, thereby increasing the importance of the problem.

Considering all phases, and where due and necessary precautions are taken, it is not found that the use of natural gas presents greater hazards than does the use of manufactured gas.

J. D. Roberts, Utah Gas & Coke Co., Salt Lake City, Utah; W. A. Dunkley, Memphis Power & Light Co., Memphis, Tenn.; W. D. Burk, San Antonio Public Service Co., San Antonio, Tex.; R. S. Fuller, Pacific Gas & Electric Co., San Francisco, Calif.; D. A. Powell, Muskegon Gas Co., Muskegon, Mich.; A. E. Merchant, New Orleans Public Service, Inc., New Orleans, La.; William Henderson, Los Angeles Gas & Electric Corp., Los Angeles, Calif.; Alfred Hurlburt, Central Public Service Corp., Chicago, Ill.; W. J. Buckley, Peoples Gas Light & Coke Co., Chicago, Ill.; George Wehrle, Public Service Co. of Colorado, Denver, Colo., chairman.

A. Commenced at outset saturation of gas with water vapor and oil fog. Steam and oil introduced at all district governor stations. Humidity 100 per cent at point of admission. Approximately 1 gallon oil used per 1,000,000 cubic feet of gas treated normally. Arrangement for supersaturation with oil fog at periodic intervals. Steam and oil introduced separately. High pressure gas used as medium for fogging oil. Calodorant introduced at town border station. Experience so far very satisfactory. The increase in inside leaks was noticeable but not excessive. Some dangerous street leaks have been disclosed by the odor.

B. Distributes dry gas. Odorant same as Company A.

C. Distributes dry gas. Odorant same as Company A.

D. Treatment same as Company A. Odorant same as Company A.

E. Treatment same as Company A. Odorant same as Company A. Inside leak complaints increased very materially.

F. Saturates with oil fog at all district governor stations using Grand Rapids method. Does not introduce any water. Does not use an odorant but contemplates an investigation.

G. Oil and steam injected simultaneously by use of oil burner spray. Calodorant used as warning agent. For a time increased leak complaints fourfold. Has indicated a few street leaks.

H. All gas entering the intermediate-pressure system is saturated to 100 per cent with steam. After reduction to low pressure at the various regulating stations, the gas previously saturated with water vapor is permitted to absorb as much oil vapor as it can hold before entering the low-pressure system. Oil is injected by means of a spray. Gas is odorized with Calodorant. The odorant has been effective in detecting leaks of all kinds, including underground main leaks.

I. Does not saturate gas with water or oil vapors. In 1927, the practice of pouring oil into mains and removing from drips was started. Risers were provided for this purpose on all low-pressure mains installed prior to 1927. The result has been satisfactory and unaccounted-for gas for subsequent years per mile of 3-inch main was as follows:

1927	1,082.0 M cu. ft.
1928	1,131.0 M cu. ft.
1929	957.2 M cu. ft.
1930	768.2 M cu. ft.

Does not odorize gas.

J. Water vapor injected August 1, 1927, continued for three months. November 1, 1927, light oil and steam at rate of .0033 gallon oil to .227 pound steam. This rate continued until April 1, 1928, when light oil only was used with high-pressure gas as injecting medium at varying rate from .0032 gallon per 1,000 cubic feet of gas in April to .0013 gallon per 1,000 cubic feet of gas in Decmy was injected January, 1930, at rate of .20 pound per 1,000 cubic feet of gas. The latter rate continued almost to present time. It now averages from .15 to .20 pound per 1,000 cubic feet. Introduction of steam is accomplished by passing gas through two horizontal high pressure tanks 6 feet in diameter and 30 feet long. Steam is controlled by an orifice in the steam line. High pressure gas only is treated as above amounting to about 80 per cent of the output at the main compressor station. Low pressure gas is hydrated sufficiently by passing through water sealed holders. Uses Calodorant as a warning agent. Result satisfactory.

K. Converted to natural gas in September, 1928. Returned to manufactured gas December, 1930. Did not saturate gas with water or oil vapors. Did not use an odorant.

BLOSSOMS INTO AUTHOR

Lester Colby, former editor of Petroleum Age and one of the first writers to bring the petroleum industry before the public through a series of articles on the old Spindletop Pool which were published in the Saturday Evening Post, has entered the "best seller" class through a small book entitled "Walking the Dog." The book is published by Mark May & Co., 732 Sherman Street, Chicago, and from orders already received by Mr. Colby, Chic Sales had better look to his laurels.

LITTLE BUFFALO BASIN RESERVE IS CAUSE OF MUCH SPECULATION

By Tolbert R. Ingram

DENVER, Colo., May 2.—The sale of leases on 2,453.43 acres of government land in the Little Buffalo Basin structure in Wyoming by the Department of the Interior at Cheyenne early this year was preceded it will be recalled, by Secretary of the Interior Wilbur approving an agreement for unit operation of the gas horizons in the Frontier formation on this structure and the leases were offered under a provision which will put them into the unit plan. There is much speculation as to whether Little Buffalo Basin is to be made a natural gas reserve for a major gas system into Montana.

The structure lies partly in Park County and partly in Hot Springs County and on the western side of the Big Horn Basin, a large natural depression around which are located the Grass Creek, Oregon Basin, Frannie, Elk Basin and other oil and gas fields. It was first drilled in 1914 when the Ohio Oil Co. brought in the discovery well in the Frontier formation. This well was located in the SW cor., Section 36-38-100. Ten wells were drilled altogether and the status of the field has remained practically unchanged since then except for one gas well drilled two years ago by the Ohio Oil Co. and another completed last year by Grebo Royalties, Inc. A small quantity of the gas is being marketed through a pipe line to Greybull, Grass Creek and other communities in that district. The structure consists of twin domes, en echelon, the highest portion of which lies within a single continuous rim rock surrounding a pronounced basin. The two domes are typical basin type structures and the escarpment, sandstone of the Mesa Verde formation, which rises approximately 500 feet above the floor of the basin can be seen entirely circling them. The average depth of the top of the Frontier is around 1,400 feet.

Unexplored Horizons

Dr. F. F. Hintze, in a report prepared in 1928, says it is a significant statement of fact in connection with the depths to which prospecting has been done in wells located properly on structure that only the Frontier sands have been tested so far. The Dakota and deeper horizons, he states, have not been penetrated at locations which have a good chance to be productive of oil or gas. Therefore, the two domes have many unexplored prospective producing horizons for future testing. These include the Dakota, the Morrison and Sundance sands, horizons which may be considered light oil prospects, and the deeper Embar, Tensleep, Amsden and Madison limestones, where black oil most likely will be found. These horizons are productive of oil or gas, or both, in a number of structures in and around the Big Horn Basin.

The Midwest Refining Co. had approximately 3,160 acres under lease prior to the sale held this year, and the Ohio Oil Co. had 1,120 acres. The Grebo Royalties, Inc., had a state lease on 240 acres and subsequently obtained an extension of a permit which it will develop. The Midwest and Ohio acreage was all taken up by locators, from whom they leased, under the old placer mining laws which were in effect prior to the general oil leasing act of February 25, 1920. This acreage mostly is on top of the two structures. The government land lies around this acreage and generally farther down on structure. Under the old placer claims law, the land went to patent and fee title obtained. The Government received no royalties from such lands. Last year Congress enacted a law which empowered the Secretary of the Interior to enter into and approve agreements for the co-operative development and unit operation of structures upon which the Government has holdings. This law expired by limitation on January 31, 1931. The unit agreement which the Secretary approved provides for distribution of income proportionately among the operators upon the structure. Through a public sale, the Government brings its holdings into the unit operation. It will receive the customary royalties from its lands. It is understood that this was one of the motives of the Secretary in offering the leases before the act permitting him to do so expired at the end of January. The sale was made under Section 17 of the Act of February 25, 1920.

Offered in Four Units

The 2,453 acres owned by the Government and offered at auction were divided into four units. Unit No. 1, consisting of 640 acres, was bid in by the Midwest Refining Co. for $14,560, or $22.75 per acre. This tract consists of the following: S half NE and SE, Section 27; W half SW, Section 26; NE NE S half NE, Section 34; NW and SW NE, Section 35-48-100.

Unit No. 2, comprising 640 acres, was bid in by the Ohio Oil Co. for $16,960, or $26.50 per acre. This tract consists of the following: W half, Section 27; SE NE, E half SE, Section 28; N half NE, Section 33; N half NW, NW NE, Section 34-48-100.

Unit No. 3, embracing 594.79 acres, was bid in by the Custer Petroleum Co. for $32,582.99, or $51.25 per acre. This tract consists of the following: S half NE, E half SE, Section 33; S half NW, SW, Section 34-48-100; Lots 3, 4, 5 and 6, Section 3; Lot 1, SE NE, Section 4-47-100.

Unit No. 4, embracing 578.65 acres, was bid in by T. A. Pedley, of Denver, for $2,893.20, or $5 per acre. This unit consists of the following: Lots 3 and 4, Section 18-47-99; Lots 9 and 10, S half SE, Section 3; NE NE, Section 10; NW NW, Section 11, N half NW, SE NW, NE SW and SE, Section 13-47-100.

Plan Modified

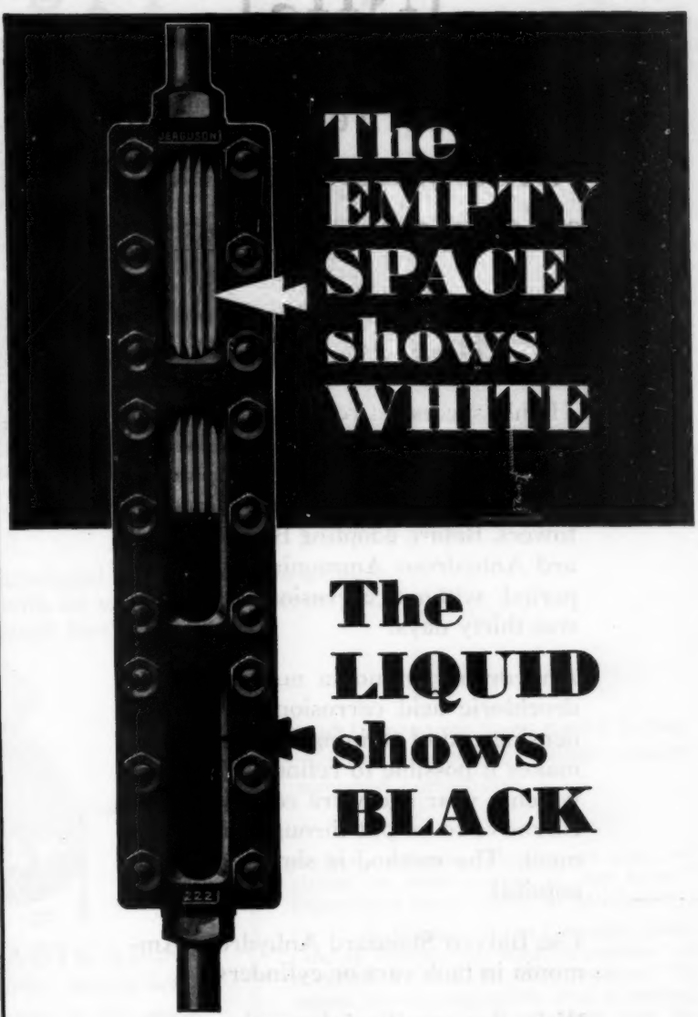
While the field has been on a unit basis for many years, and possibly has the distinction of being one of the first thus operated in the country, this was made possible by an agreement among the landowners and the State of Wyoming. Through the entrance of the Government into the operation by the sale of its leases, this plan is modified. The terms of the sale provided that "Whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest, the lessee shall enter into a unit operating agreement as to natural gas that may be produced from the sands of the Frontier formation in the Buffalo Basin Field, under which the lessee will receive his proportionate part, on a producive acreage basis, of the proceeds of the total gas produced and sold from the said field; shall drill and complete, with due diligence, one well to the gas sands of the Frontier formation, or in lieu thereof, shall assume to the operators under such agreement, a charge for past development of $75 per productive acre, without interest, against the lessee's share in the proceeds of gas; and shall bear a proportionate part, on a productive acreage basis, of all future development and production costs.

"That unless and until a unit operating agreement shall have been determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest, the lessee shall drill and produce only such wells on the leased land as are necessary to offset drainage from the leasehold through wells on adjoining lands unless authorized in writing by the Secretary of the Interior to drill or produce additional wells or unless directed by said Secretary to drill and produce wells in number not greater than the number of 40-acre tracts or lots embraced in the lease; provided that, for each month during which loss of royalty occurs by reason of drainage from the leasehold the lessee shall pay a sum estimated to reimburse the United States therefor."

Possibility of Oil

While it is considered very likely that oil will be found in deeper horizons on the structure, it is apparent that the Department of the Interior does not intend

This gage shows in *BLACK* and *WHITE*



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Enables refinery to operate 8 months without shut-down on account of corrosion

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Highly successful results from Barrett Standard Anhydrous Ammonia are reported by a large refining company, in preventing corrosion in vapor lines and towers. Before adopting Barrett Standard Anhydrous Ammonia, the longest period without corrosion shut-down was thirty days.

Anhydrous Ammonia neutralizes hydrochloric acid corrosion in the condensing end of refining equipment and makes it possible to refine sour crudes which a year ago were considered too corrosive to be put through the equipment. The method is simple and economical.

Use Barrett Standard Anhydrous Ammonia in tank cars or cylinders.

Write for specific information on its application to any problem of corrosion.

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Barrett Standard

ANHYDROUS
AMMONIA

to let its sale of leases interfere with its conservation policy as indicated in the following terms of sale:

"That in case a discovery of oil shall be made, or if a discovery of gas be made in a horizon known or reasonably likely to contain oil in the same structure, the lessee agrees to place the well, after testing, in condition for indefinite suspension and shut it in to the satisfaction of the supervisor of oil and gas operations, in which condition it shall remain until otherwise authorized or directed by the Secretary of the Interior."

An estimate credited to a government official placed the gas content of the unitized area at 100,000,000,000 feet. The plans of the purchasers of leases and the companies already having acreage on the structure, if any, for marketing of the gas have not been made public. Known and pertinent facts have, however, raised considerable speculation as to whether Little Buffalo Basin is to be used as a major gas reserve for a 250-mile pipe line to Butte and Anaconda, Mont.

The Montana Power Co., owned by the American Power & Light Co. and operated under the supervision of the Electric Bond & Share Co., is the largest public utility company in Montana. It supplies electric light, heat and power to 103 communities including such towns and cities as Bozeman, Butte, Deer Lodge, Great Falls, Harlowtown, Havre, Lewistown and Livingston. Subsidiaries in several of these towns distribute manufactured gas. On April 29, 1929, the stockholders ratified an amendment to its charter which, among other things, will permit it to carry on natural gas business. Since then negotiations have been conducted by several interests looking to the construction of a natural gas system and obtaining a supply of gas. The Moody-Seagraves interests, the Hope Engineering Co., the Ohio Oil Co., the Midwest Refining Co. and some others have at one time or another been connected with these negotiations.

Gas Franchises

The Montana Power Co., went ahead, however, on its own account and applied for franchises in several towns. An application came before the Butte council on September 18, 1930, at which Frank M. Kerr, vice president and general manager, was quoted as having informed the council that if granted a franchise the company would spend $12,000,000 to $15,000,000 to bring natural gas to Butte and Anaconda. In addition, the Anaconda Copper Mining Co. would expend $1,500,000 in converting its mines and smelters to use gas. In the meantime franchises were obtained from Livingston, Anaconda, Deer Lodge and Bozeman. The Butte franchise was contested in court and on December 29, 1930, a decision was rendered validating a city election giving the council power to grant the franchise. The decision was supposed to have removed the last obstacle to the construction of the line.

However, the source from which the Montana company would obtain its gas was not disclosed. The Ohio Oil Co. and the Midwest Refining Co. have large gas holdings in northwestern Wyoming and southern Montana, but these interests, it was indicated, preferred to build their own lines and the Ohio company obtained a franchise in Bozeman, where the Montana company also secured one, and gave other evidences of making progress on independent plans. The Montana company was reported to have contracted with several independents with holdings on the Polecat, Oregon Basin, Garland, Dry Creek and other structures for gas if and when they could produce it and it is considered not unlikely that an ample supply could be developed from these sources, but assurances were needed of a large future supply.

When the Department of the Interior made known its intentions of opening the Little Buffalo Basin Field with an estimated potential capacity of 100,000,000,000 feet of gas, the sale was closely watched to see if it had any bearing on the pipe line projects. Interests identified with the Electric Bond & Share Co. were advised of the sale, but a reply brought the information that it was not interested. The company was not represented at the sale and submitted no bids. This led to a speculation as to whether the interests owning large gas reserves in Wyoming had reached an agreement whereby joint construction of the projected system would be undertaken. It appeared to be the logical development as the territory to be served is hardly large enough for more than one undertaking of that expensive nature.

USE OF LIQUEFIED HYDROCARBON GASES

(Continued from Page 115)

240 pounds per square inch, and open at a pressure of approximately 300 pounds.

Barge tankers are used in rare cases where rail facilities are lacking or advantage is taken of the lower water rates in making bulk delivery.

The pipe lines which are in use are small in diameter and of no great length. However, the time is not far distant when pipe lines will be used more extensively. Two such lines are contemplated. One of our large public utilities is giving the matter careful and constructive thought.

Uses of Liquefied Hydrocarbon Gases

A large fund of information relating to the various applications of these gases as fuels has been broadcast. From time to time, articles have appeared in newspapers, magazines, literature of producing and appliance companies, and in governmental bulletins. Probably the most comprehensive and concise of the articles is the one issued from the Petroleum Economics Division of the United States Bureau of Mines. The speaker refrains from a reiteration of the data contained therein, and will assume greater or less familiarity with the facts set forth. He will proceed directly to the presentation of facts in an effort to show the real utility of these liquefied hydrocarbon gases.

(a) Bottled Gas Service

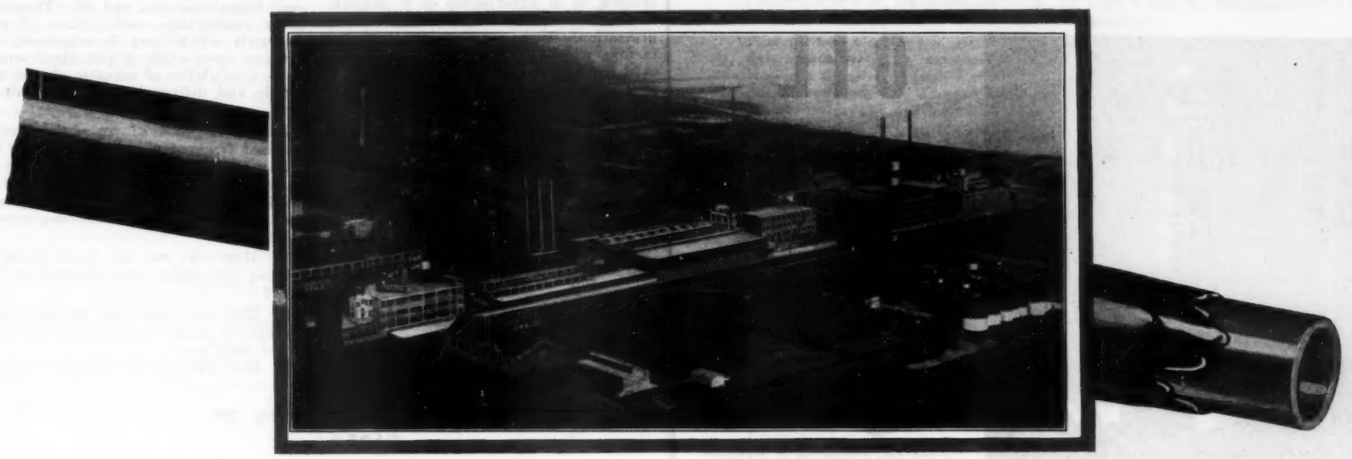
These two gases in cylinder form have value to the gas industry by enabling it to render service outside the area now covered by pipe line distributing systems, and thus increase the industry's sphere of activity and influence. It has been conclusively demonstrated that this form of service is eminently satisfactory, and that a very large number of people enjoy a convenience which would otherwise be impossible. Numerous, efficient, and beautiful appliances are available for all domestic purposes wherein these gases may be used. Several of the large public utilities have already planned to utilize these gases, by providing all the accessories entailed in rendering the so-called bottled gas service. There is no question about the advisability and the progressiveness of such a procedure. Public regard for the utilities will be enhanced, and when public goodwill is needed, in any utility expansion program, the cordiality of these mutual relations will constitute an asset. Failure to provide this convenient service is likely to constitute a liability.

(b) As Raw Materials in Gas Industry

A study of the physical properties, and some of the characteristic chemical properties of these hydrocarbon gases by technologists and engineers, will readily disclose the possibilities of utilizing these as raw materials in the gas industry, for the purposes of mass fuel gas production to meet the requirements of communities, towns, cities, and large industries.

The practical executive will withhold judgment regarding the utility of these gases until he has had time to deliberately and constructively study the attendant economic factors. He will make a thoughtful appraisal of coal, coke, and oil. He will rehearse the history of gas-making materials, and study the effect of any changes which have been made in these, in the growth of the industry. Gas making appliances, retorts, generators, carburetors, ovens, holders, purifying systems, waste heat boilers, by-products, line deposits, meter troubles, etc., will race back and forth in his mind, and will more or less color the picture which he paints, and which he will use in comparing the past with the future. He will not

Why Sherwin-Williams LYNE-KOTE gives *better and longer lasting* pipe line protection



1

Because it has been specially developed by the world's largest makers of protective coatings—with 60 years of experience and unlimited research facilities.

2

Because complete control of materials and processes in the S-W coal tar plant insures freedom from corrosive impurities.

3

Because field and laboratory tests prove Lyne-Kote has *superior* protective value under severest conditions.

Lyne-Kote is a tough, elastic, non-cracking and non-peeling heavy coating for pipe lines.

It is oil and water-proof. The following remarkable tests show how well it resists acids and alkalies and provides insulation against electrolysis.

No electrolysis in 10 months! A specimen of one-inch pipe was given a coat of Lyne-Kote Primer and one of Lyne-Kote Enamel. The pipe was then immersed in a 5% salt solution, the pipe as one electrode, a battery carbon as the other. A sensitive galvanometer has indicated no passage of current to date—a period of ten months!

A prospective user of Lyne-Kote made several severe field tests in "hot spots" and wrote us: "Although a competitive enamel was badly pitted—almost to the bare pipe in one place—and another showed slight pitting, Lyne-Kote was in perfect condition, showing no signs of pitting or deterioration in any form." Other tests have proved as satisfactory.

Dr. J. C. Warner of the Carnegie Institute of Technology made a number of tests of Lyne-Kote. He reports: "It seems almost impossible that a coating as non-porous as Lyne-Kote can be made. You should have good success with this product."

Let us give you the whole Lyne-Kote story. The cost of good protection is so little when compared to pipe replacement costs that it will certainly pay you to use nothing but the best. We can also supply a quicker drying Lyne-Kote Primer to fit into mill production schedules. Write for complete information today.

These LYNE-KOTE features *mean better pipe protection*

1. Impervious to air, moisture, acids, alkalies and petroleum products.
2. Insulating properties prevent electrolysis.
3. Grips surface of pipe—expands and contracts with it. Resists soil pressure.
4. Does not become brittle or run off pipe at normal temperatures.
5. Withstands shocks and abrasion.
6. Applied hot, hardens in a few minutes—applied cold, in 8 to 10 hours.
7. No bubbles or pin holes.

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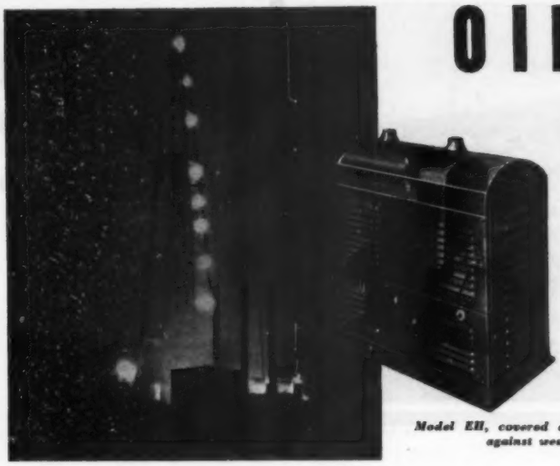

Model EH, covered as a protection against weather

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Whether it is to light entire camps — to provide light for loading racks, pumping stations, drilling rigs — or to provide power for grinders and other power tools — Kohler Plants yield steady, standard electric current as reliable as city service.

Kohler Plants generate current at 110 or 220 volts A. C. or D. C. Capacities range from 800 watts to 10 K. W. Of special interest to oilmen is Model EH, a 1½-K. W. 110-volt D. C. plant with metal housing. In this model the metal hood encloses the entire plant, including the gasoline tank, thereby protecting engine and generator from the elements. The controls are on the outside and the plant can be operated without raising the hood.

Kohler Electric Plants are used in many of the world's largest oil-fields. Send coupon for booklet describing details of these highly efficient, practical, portable units. Kohler Co. *Founded* 1873. Kohler, Wis. — *Shipping Point*, Sheboygan, Wis. — *Branches in principal cities.* . . . Manufacturers of Kohler Plumbing Fixtures.

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dare to retrograde, and no one will be more conscious of his responsibility than he, when he reaches a definite conclusion to either stand still or go forward. We are hopeful of being able to make an analysis of the situation which will be helpful to this practical executive in moving forward.

The program of facilities for production and distribution, as it has been developed, is in anticipation of a program of demands for economic consumption and utilization. There are certain well-known factors which have been, and are now, used in determining the utility and economy of any commodity which may be used for fuel, or energy-producing purposes. The following items must be given a definite value in any accurate and complete appraisal, or summarized valuation, of the liquefied hydrocarbon gases to the gas industry.

(a) Investment required in plant and accessories.

(b) Cost per unit of commodity to point delivered.

(c) Expense of operation and maintenance.

(d) Quality of commodity and finished fuel as distributed.

(e) Flexibility of use of commodity in meeting any unusual or peak load requirements of volume, heating value, etc.

(f) Adaptability of commodity for specific purposes:

1. Where controllability of temperature is essential to effect uniform output.

2. Where purity minimizes number of rejects, or increases yield per unit of gas consumed.

3. Where processes of utilization are susceptible of automatic regulation, and, hence, decreased labor cost.

4. Where safety in utilization is of prime importance in eliminating hazard to life and to property.

A comparative and analytical study of the several appraisals, based upon the same items, of hydrocarbon gases, coal, coke and oil, will be informative and will serve as a reliable guide in making conclusions. The cold facts will speak for themselves. No one raw material is a panacea for the ills of our industries. There will be "dead lines" for each material. No Man's Land is certain to be found.

(e) Liquefied Gases in Gas Plants

The liquefied hydrocarbon gases are admirably suited to use for gas-making purposes in connection with coke, anthracite coal, bituminous coal and oil. There are many conceivable combinations of raw materials which may be employed, depending upon existing gas plant equipment, availability of supplies of raw materials and delivered prices per unit of fuel.

During the past 12 years, the speaker has had frequent occasion to discuss the utility of these hydrocarbons with gas engineers and executives of our eastern public utility companies. The inquiries elicited have been of the following general substance:

1. How may we use these gases in existing gas plants and distributing systems?

2. How may these gases be used to advantage in small communities not now served with gas?

3. How will the use of these gases affect adjustment in existing appliances?

4. What profits may be expected and what investments will be required?

It is necessary to remark that answers cannot be given to these four inquiries without study of each particular existing plant, the new communities to be served, the appliances which are in use, the profits which are now realized, and the investment actually carried.

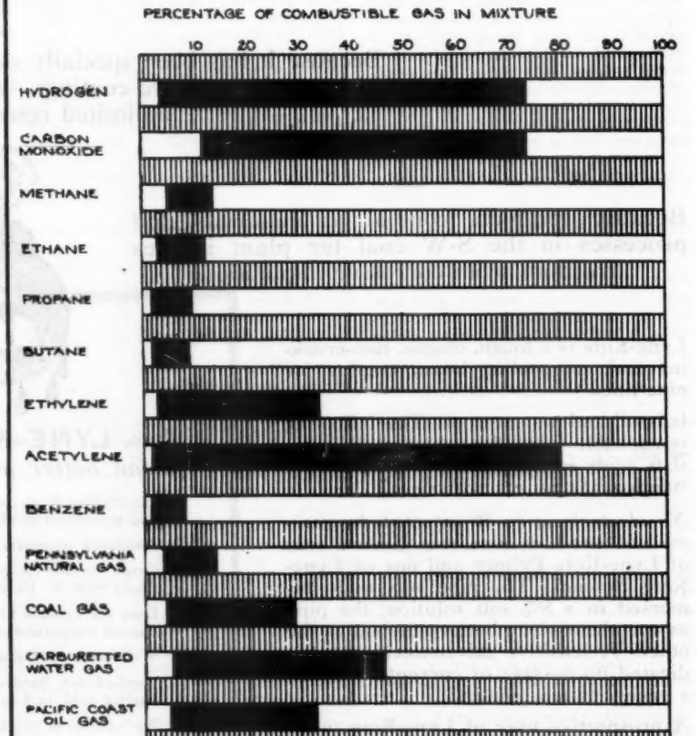
In existing gas plants, both liquefied hydrocarbons have application for use as follows:

(a) As enriching agent, in place of gas oil or bunker oil, for blue water gas.

(b) As joint enriching agent, B.t.u. adjuster, and auxiliary fuel in old retort coal gas plants.

(c) As auxiliary fuel in meeting peak

INFLAMMABILITY LIMITS OF GASES



load demands of coal gas, carburetted water gas and mixed gas plants.

(d) As B.t.u. adjusting fuel to offset thermal losses due to compression, cooling and transmission under high pressure.

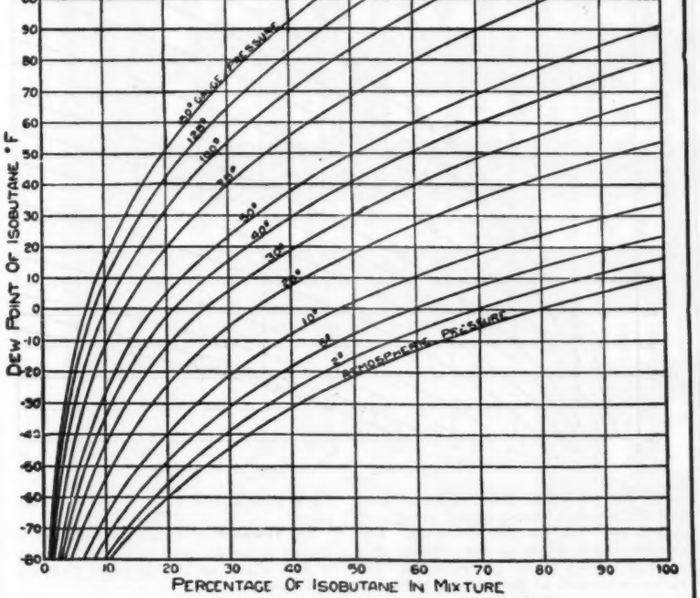
No Difficulties Encountered

No difficulties of any kind have been encountered in these uses of the hydrocarbons in the various plants. The economies which have been effected are noteworthy. There are some economic disadvantages, such as increased investment in liquefied hydrocarbon storage and for special equipment for the introduction of liquid hydrocarbons into the gas stream. There are no light oil or tar credits. There is a slight increase in the specific gravity of the gas, but not of such moment as to require readjustment of appliances.

The advantages more than offset the disadvantages. The hydrocarbons have a constant enriching value. There is 100 per cent thermal efficiency in use. There is flexibility in the use of these hydrocarbons to satisfactorily take care of peak and overload conditions. Light oils, naphthalene, gums or resins do not accumulate in mains or meters. There is no thermal loss in compression and cooling. The boiler fuel required is materially less.

tion. Two straight butane vapor plants and one propane vapor plant are in satisfactory and successful operating condition. Two additional butane vapor plants are under construction. Many of the large utilities have assigned their engineers and executives to a critical study of these developments and their probable application to the solution of problems such as high holder costs, antiquated plant replacements, new community installations, gas service extension plants, and the general antipathy of the public to the use of electricity for cooking and heating purposes.

The facts relative to the use of these hydrocarbons as a sole source of gas-making materials are impressive. Investment in plant is small, operating and maintenance charges low. Operation is entirely automatic and exceedingly flexible. There are no purification costs, no line condensates, or meter troubles. The consumers are satisfied with the service. The rates are equitable. The possible return on investment is attractive. There are no unusual problems involved, or safety measures required. Of particular interest in this connection are the photographs of an installation completed less than a month ago in the State of Oregon. Temperature conditions during the initial days of operation were around 0° F. No difficulties of any kind, due to this low temperature, have been encountered. The Oregon plant was constructed by, and in accordance with, the designs of Thebo, Starr & Anderton, Inc., of San Francisco. The plant is the property of a subsidiary of the Standard Oil Co. of California.



The expenses of maintenance, purification and operation are decidedly less. The capacity of retorts, generators and other gas-making equipment is increased.

(d) As Exclusive Raw Materials in Gas Making

There are approximately 2,000 communities in the United States, the population of which is in excess of 1,500. The citizens thereof have not enjoyed the cleanliness, convenience and comfort of gas. There are 355 communities — all over 1,500 population—in the New England states, which do not have any gas service. Out of a total population of 8,300,000 in the New England states, only 6,410,000 are now served with gas. Using a liberal ratio (11 to 1) of population to consumer, based upon the years of experience of the public utilities, there are 167,200 possible consumers in the New England states who are willing to pay for gas service, if it is available. An average consumption of 30,000 feet per year per customer would amount to an additional gas load of about 5,000,000,000 feet. These figures demand serious reflection and consideration. Within the past year, 100 or more of such communities have granted franchises for the installation of butane-air, straight butane, or straight propane gas plants. More than 50 butane-air plants are in successful and satisfactory operating condition. Twenty additional plants are in course of construc-

(e) Reformation Processes

Probably the most significant and remarkable development in the use of liquefied hydrocarbon gases as raw materials for gas-making purposes is in the reformation of these gases in water gas generators. The Bureau of Mines in its Reports of Investigations, Nos. 2,973 and 2,991, has shown, by series of elaborate experiments, that this reformation can be affected with high thermal efficiency. Quoting therefrom: "The chief variable, influencing, operating results have been studied and methods of control are well understood." . . . The finished gas which is produced has, substantially, the same properties as the gas now distributed by our large utility companies.

All of the standard equipment in a carburetted water gas plant is used excepting the carburettor and the superheater, and these are not required. The experimental results of the Bureau of Mines have been more than confirmed in the large scale production of reformed oil

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BAROID SALES COMPANY is now exclusive domestic and foreign sales agent for the LEMCO Mud Screen. These screens are stocked and distributed in California by the Republic Supply Company of California and in the Mid-Continent and Gulf Coast by Bridgeport Machine Company and Lucey Products Corporation.

Perfect mud screening is assured by the Lemco Screen which is the *only* screen especially designed for this important work. It unfailingly removes all cuttings from drilling muds, which assures faster drilling, greatly reduced wear on pump parts and other equipment and affords greater safety in drilling. One Lemco Mud Screen will treat the maximum flow of mud from a hole. Furnished for either electric or steam power. No shaking frame requiring an expensive supporting structure and no belts or drive chains requiring repairs and adjustments. Easily and quickly installed, working parts fully enclosed and protected. Screen assemblies and repair parts available at your local supply store. Write for complete information.

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EXTRA-HEAVY COLLOIDAL DRILLING MUD

BAROID is a uniform, high-grade specially prepared pulverized weight material for increasing the weight of Drilling Mud to overcome high gas and water pressures. It is packed in 100-lb. sacks and carried in stock in all oil fields.

BAROID has a specific gravity of 4.2 and enables the preparation of very thin muds weighing 120 lbs. to the cubic foot (16 lbs. per gallon). Special BAROID can be obtained to make heavier muds if necessary.

BAROID can be added to your regular Drilling Mud to increase its weight, or can be mixed with water to prepare extremely heavy thin muds. Drilling Muds made up from BAROID will positively not settle out of the hole, eliminating danger of stuck pipe and preventing fishing jobs. BAROID is nonabrasive, inert and does not gas-cut. For further information write for free copy of BAROID Bulletin.

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AQUAGEL is a uniform, high-grade specially treated pulverized clay, packed in 100-lb. sacks and carried in stock in all principal oil fields. Mixed with water in the proportion of 3% by weight, one ton of Aquagel makes 180 bbls. of extraordinary Drilling Mud for use where high pressures are not encountered—or added to your regular Drilling Mud in small quantities it will impart extraordinary characteristics to the mud.

AQUAGEL will: Prevent caving; prevent stuck drill pipe and casing; prevent loss of circulation; prevent mudding off of producing sand and prevent gas-cutting. It will keep all solids in the mud from settling out in the hole and will speed drilling by lubricating the drill pipe and walls of the hole. In cable tool holes all casing may be recovered if AQUAGEL-water fluid is used prior to setting each string. For further information write for free copy of our Mud Handbook.

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A Complete SAFE Tubing Service

gas in the plant at Chester, Pa. The Chester plant is satisfactorily operating in the production of a gas comprising a mixture of approximately 50 per cent water gas and 50 per cent reformed refinery gas. This gas is made to a 530 B.t.u. per cubic foot specification, and has a specific gravity of approximately 0.50. The method of operation of the process is essentially the same as in the normal blue water gas process, but in addition each steam uprun through the fuel bed is followed by an uprun through the fuel bed of straight refinery gas. This procedure results in an average gas of approximately 425 B.t.u. per cubic foot, and a specific gravity of 0.45. The "made" gas is then enriched to the desired B.t.u. value by direct addition of refinery gas. This enrichment normally increases the specific gravity of the gas to about 0.50. In the Chester plant the production of 1,000 cubic feet of 530 B.t.u. gas requires approximately 300 cubic feet of 1,600 B.t.u. refinery gas, and 10 pounds of coke, as generator fuel —90.3 per cent thermal efficiency. The carbon "cracked" from the refinery gas remains largely in the generator fuel bed and is consumed as fuel during the blow. No operating difficulties have been encountered, and the process seems admirably applicable to the utilization of liquefied petroleum gases, in conjunction with the operation of an ordinary blue gas generator.

To effect the use of larger quantities of propane and butane than are possible by straight dilution with blue gas, it is necessary to subject these gases to some special treatment which will reduce their heating value with an accompanying increase in volume (2.5 to 1). This can be done by cracking the heavier hydrocarbons into lighter hydrocarbons and hydrogen. The accompanying tabulation of approximate gas analytical data is strikingly interesting.

It will be noted that the analysis of the enriched gas mixtures is similar to that of ordinary carburetted water gas analysis, but contains somewhat more hydrogen and methane, and somewhat less of the total higher hydrocarbons, including illuminants, than is usual.

A careful study of the economic features involved in this method of use of liquefied hydracarbon gases will, it is believed, fully warrant some of the large gas companies in adopting this method of gas manufacture as standard procedure.

Conclusions

The following is a summary of the data, as these have been presented:

1. The supply is adequate.
2. The demand must be regular, uniform and of economic volume.
3. The methods of production are highly developed, and hence assure the industry high purity and uniform quality material.
4. Means of transportation and distribution are adequate, thus assuring widespread geographical availability of these fuels.
5. The physical, physiological and chemical properties warrant the claims for a general and extensive use of these gases.
6. The welfare of the gas industry requires deliberate and constructive study of the utility of the liquefied hydrocarbon gases:

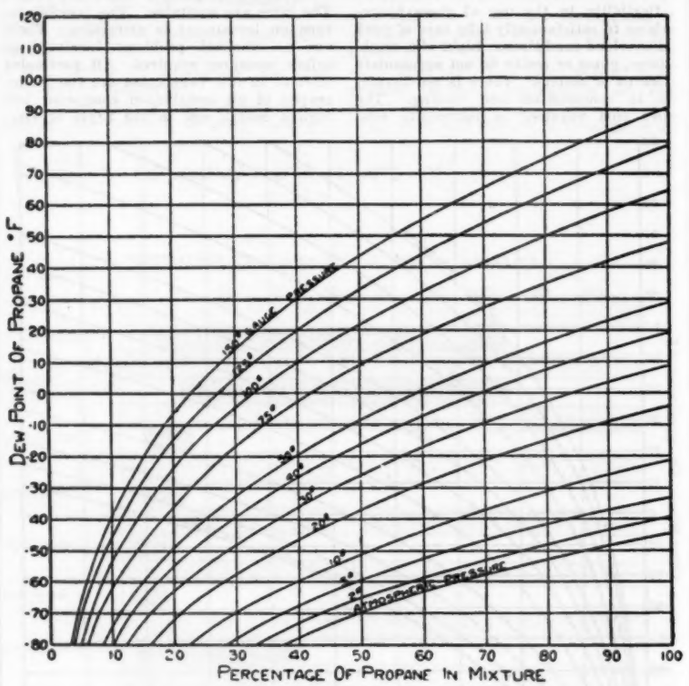
(a) In rendering bottled gas service to small communities, to develop good will, and to extend the influence of the industry.

(b) In using these liquefied gases as auxiliary fuels in enrichment of blue gas, for B.t.u. adjustment, and to offset thermal losses. The advantages more than offset the disadvantages.

(c) The utilization of butane and/or propane in air or inert gas dilution plants for the supply of gas through distributing systems to small communities, towns and cities; and,

(d) The use of these gases as raw materials for reformation in blue water gas sets.

The gas and petroleum industries must welcome the advent of the new ally, and accord it a place which it economically merits. The development is in the line of progress; it conduces to the conservation of natural resources, and it offers much



APPROXIMATE GAS ANALYTICAL DATA

Constituents—	Blue gas	Reformed gas	Enriched mixture	Carburetted water gas
Oxygen	0.8	0.7	0.7	0.5
Nitrogen	6.8	3.9	5.9	2.9
Carbon dioxide	4.5	0.5	2.5	3.0
Carbon monoxide	39.8	0.5	20.6	34.0
Illuminants	...	2.2	1.3	8.9
Hydrogen	47.1	62.6	49.5	40.5
Methane	1.0	29.6	16.3	10.2
Butylene	...	...	3.2	...
Total	100.0	100.0	100.0	100.0
B.t.u./cu. ft.	285	600	530	550
Specific gravity	0.4	0.5	0.50	0.62

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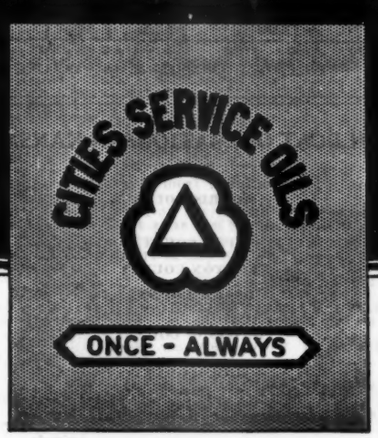

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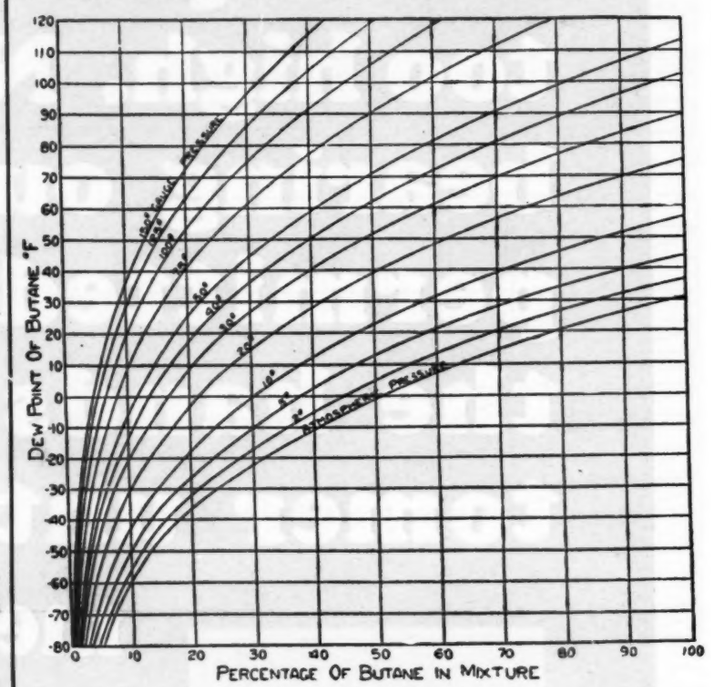
of value in an extension of public service and influence heretofore impossible. Let the gas industry go forward fearlessly in rendering its service of convenience, cleanliness, comfort, control, rapidity, efficiency, and economy, and thus materially contribute to the establishment of closer and more cordial public relations.

Must Be Co-ordinated

The effort of this trinity of allied interests—gas, oil and liquefied petroleum gas—whatever it may be, must be co-ordinated and co-operative. The executives of these industries must sense the right course to pursue after a frank, careful and honest consideration of the facts available. The situation challenges the interest and study of us all, so that out of the sound deliberations, there may be evolved a new and a better community of interests. Modern methods of production must entail less man power; must speed up quantity, as well as quality, of finished product; must reduce cost, time and effort. Whatever step is taken must be forward, in the interest of stockholder, consumer and general public. There must be no sacrifice of any of the magnificent economic structures which have been built, and which constitute the financial basis of these allied interests. There is a happy midground where the welfare of the general public and the prosperity of the allied interests merge and lose their identity.

The fundamental considerations which have functioned in the past must remain inviolate, and the front lines of defense and offense remain unbroken.



WILDCAT OPERATIONS IN KANSAS

(Continued from Page 44)

MORRIS COUNTY

Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7 ..Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9 ....Shut down 1,950 ft.

NESS COUNTY

Gypsy Oil Co.'s No. 1 Coleman, C SW NE Sec. 25-17-25w.Drlg. 4,614 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w .....Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15 ....Shut down 1,525 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17 .....Shut down 400 ft.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Weaver, SW cor. Sec. 3-2-35w .....Shut down 2,700 ft.

RICE COUNTY

Detrick & Langston's No. 1 Purcell, NW cor. Sec. 33-19-9w .....Fishing 905 ft.
McFadden and Shell's No. 1 Jennings, SW NE NW Sec. 29-18-6w .....T. D. 1,450 ft.; plugging back to 1,130 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w .....Show oil 3,107-15 ft.; Silicious 3,-330-36 ft.; estimated 1,500 bbls.; shut in.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w.Rig.

RENO COUNTY

Shell Continental's No. 1 Blake, SW SE SE Sec. 23-23-4w.Rigging up standard tools 3,269 ft.

ROOKS COUNTY

Empire Oil & Ref. Co.'s No. 1 Halsman, SW NE SE Sec. 17-7-20w .....Drlg. 2,705 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w .....Shut down 2,130 ft.; show gas.

RUSSELL COUNTY

Hall et al's No. 1 Mills, SE SW SE Sec. 30-14-13w .....Drlg. 2,268 ft.
Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w .....Shut down 3,374 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w ....Shut down 2,814 ft.

SEDGWICK COUNTY

Buck et al's No. 1 McNananan, NE NW NW Sec. 2-29-1..Shut down 2,440 ft.

SALINE COUNTY

Stanolind Oil & Gas Co.'s No. 1 Martin Com., NE SE SE Sec. 3-16-3w .....Drlg. 2,425 ft.
Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w .....Shut down 2,700 ft.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w ..Drlg. 1,455 ft.

STAFFORD COUNTY

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w .....Drlg. 180 ft.

SUMNER COUNTY

Spencer et al's No. 1 Porter, NE SW Sec. 12-33-4w .....Rig.
Otstot et al's No. 2 Marlow, C SE NW SE Sec. 22-33-3w..Spudding.

WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 ....Shut down 1,730 ft.

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O C E C O

PROMISING OPERATIONS IN SOUTHERN CHILE

It is expected that oil will flow when the drilling operations being carried on in the Tres Puentes fields by the Chilean government experts advance beyond a depth of 4,000 feet. The results so far are satisfactory, according to the latest news from Magallanes.

Although the extent of the drilling has not been disclosed, it has been insistently asserted that the presence of oil and gases has been confirmed and that oil deposits in the lower strata demand more efficient study in the large Magallanes territory in southern Chile, where the existence of oil was asserted many years before the government decided to investigate scientifically.

While a contract has already been made with a Colombian engineer to survey northern provinces, especially mountain districts, and promising results have been obtained, the government is considering the oil question more seriously in southern Chile, where geological indications point to the existence of oil on a commercial scale. Contracts signed with European firms provide for the geophysical examination of a wide region.

SUGGESTED METHODS OF COMPUTING ORIFICE SIZES

(Continued from Page 116)

ditions. The value of correction for gravity and pressure base is the quantity B. The line diameter is the value D. The correction for flowing temperature is the value G, and the correction for temperature base is the value F. We compute the value of $\frac{A}{BGD^2F}$, look up the resulting number on the ordinate of the curve and follow down to the reading of $\frac{d}{D}$ on abscissa. Taking this value of $\frac{d}{D}$ obtained from the curve, we multiply it by the value of D. The result is the desired orifice size.

Take a numerical example. Suppose it is desired to obtain a coefficient of 10,000. The specific gravity is .81, pressure base 4 ounces, flowing temperature 60°, temperature base 60° and line size 12 inches. The value of A is then 10,000, the value of B, 1.0921; the value of G, 1.0; the value of D^2, 144, and the value of F is 1.0. The equation will be

$$\frac{10{,}000}{1.0921\times1\times144\times1}=\frac{C}{D^2}.$$

Solving this, the number obtained will be 63.59. Locating this number on the $\frac{d}{D}$ curve, you obtain the corresponding $\frac{d}{D}$ equal to .5412. This multiplied by D gives .5412 times 12 inches or 6.494 inches, which is the desired orifice size.

Suppose the pressure is constant and we wish to include it in the coefficient. Take a numerical example in which the square root of differential times 100,000 must equal rate of flow in cubic feet per hour. $A=\frac{1{,}000{,}000}{\sqrt{P}}$. This value of A should be used for substituting in Equation 1.

Suppose the operating conditions were as above stated and the operating pressure was constant at 100 pounds pressure. The value of P would then be 114.4. The square root of this value may be obtained from table of multipliers. It will be found to be 10.70. The equation will then be:

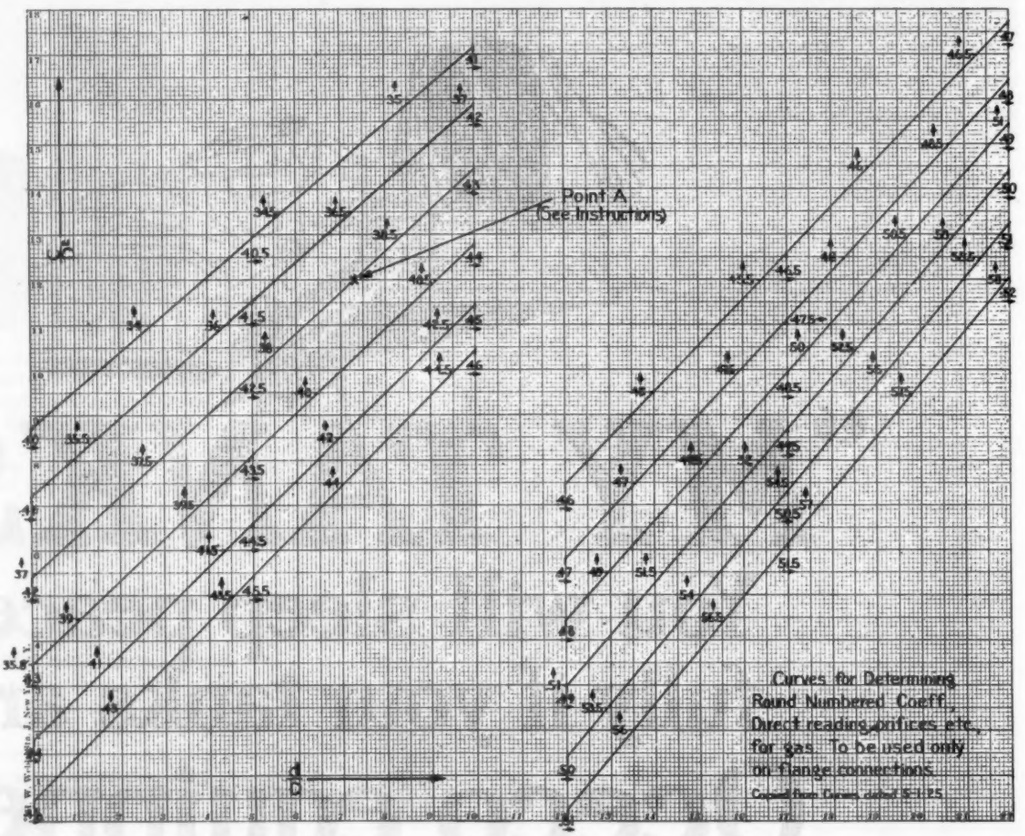
$$\frac{C}{D^2}=\frac{100{,}000}{1.0921\times1\times144\times1\times10.70}.$$

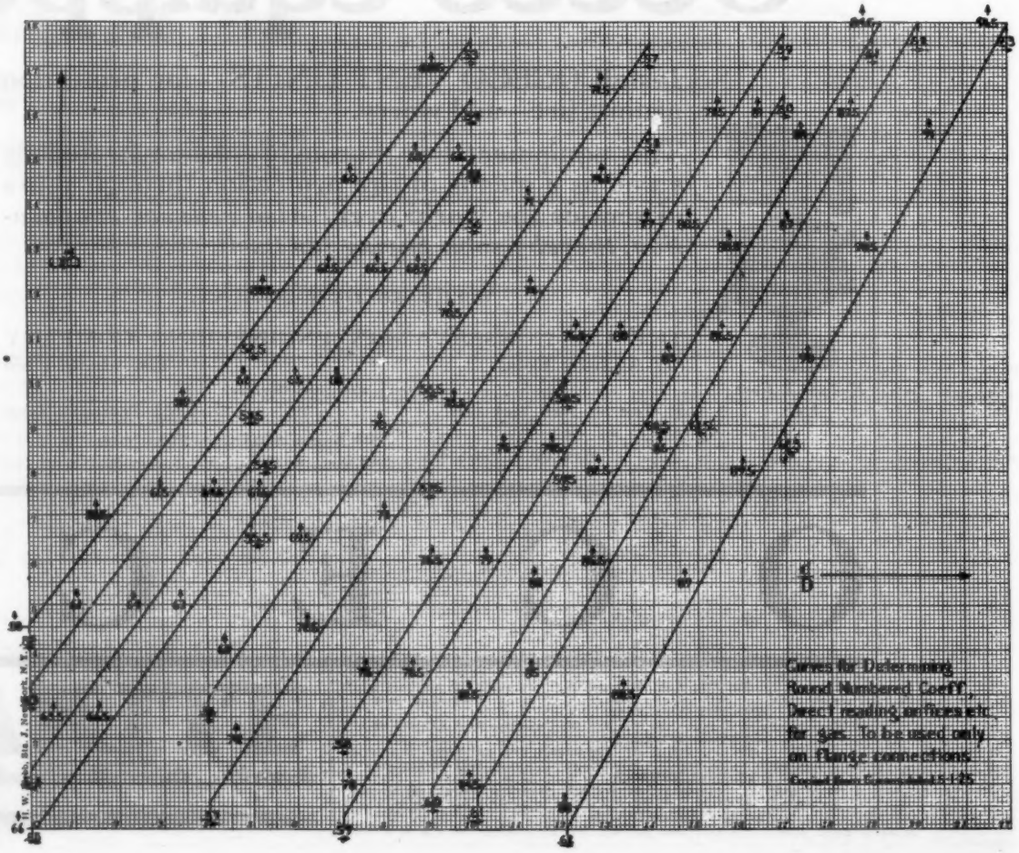
The result is 59.43. Looking up the value of $\frac{d}{D}$ corresponding to 59.43, on the curve, you will find it to be .5253. Multiplying this value of 12 inches, you will find the corresponding orifice size is 6.304-inch. This size orifice in a 12-inch line will then give a differential such that the square root, if multiplied by 100,000 will give the rate of flow in cubic feet per hour.

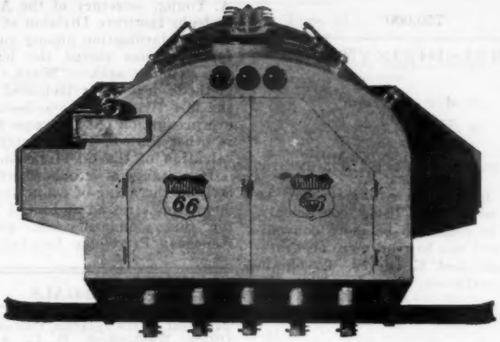
Now we go one step farther. Assume the pressure to be constant and figure an orifice for a direct-reading meter. As a numerical example, let us consider that we have a 0-75 square root chart and a 0-50-inch range meter and wish to make it read direct 0-750,000 cubic feet per hour. The desired coefficient $A=\frac{750{,}000}{\sqrt{hP}}$.

P, as before, is the average operating absolute static pressure, and h is the differential (50 inches) corresponding to a flow of 750,000 cubic feet per hour. $A=\frac{750{,}000}{\sqrt{50\times P}}$.

Consider that the conditions of pressure gravity, temperature, line size, etc.,







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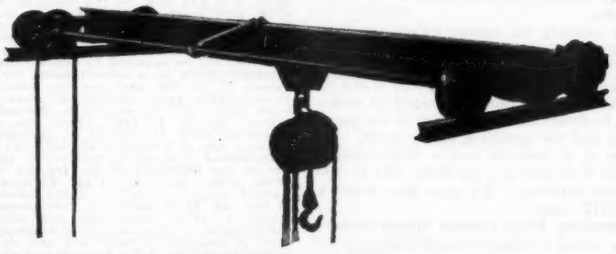

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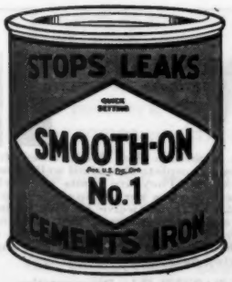

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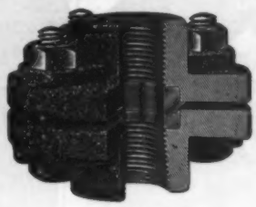

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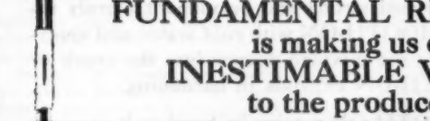

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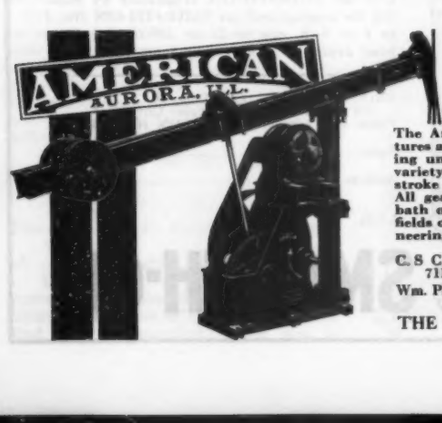

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are the same as in the two preceding cases.

$$\frac{C}{D^2} = \frac{750{,}000}{1.0921 \times 1 \times 144 \times 1 \times \sqrt{50} \times 114.4} = 63.06.$$

$$\frac{d}{D} = .5392$$

$$d = .5392 \times 12'' = 6.470''.$$

Another use of these curves may be found in computing basic coefficients. They will be found to be more convenient to use and can be read more accurately than published E curves. To obtain the basic coefficient for any orifice, figure $\frac{d}{D}$. Look up the corresponding value of $\frac{C}{D^2}$ and multiply it by D^2. The result will be the basic coefficient of the orifice at pressure base, 14.4 pounds per square inch absolute, temperature base 60° F., flowing temperature 60° F., and specific gravity 1.0.

CEMENTING GRAVES SAND WELLS RECOMMENDED

(Continued from Page 60)

termined after the tubing has been pulled and tested with the bailer.

Then it may be necessary to run another batch of cement to fill it up to the proper level.

Cementing Under Pressure

By running a string of tubing after the well has been cleaned out with a Baker cement retainer on bottom of the tubing and set at the desired depth.

The cement retainer being set by just turning the tubing a little to the left and putting a strain on it.

To release after cement has been pumped in, just turn the tubing to the right as it has a left-hand thread on the top of the retainer.

By using the retainer it is necessary to pump cement under pressure for the best results.

In running the cement unless you have a mixing device like the cementers use, it is best to use two boxes, one to mix the cement in and the other to pump it out of.

The pressure this is pumped in under will be determined by the size of the pump used, and the condition of the same.

So it is best to use a high-pressure pump that will put up from 300 to 700 pounds pressure. We have been using a 10x3x12 pump.

Cementing With Cement Dump Bailer

In using a cement dump bailer, clean the hole out to bottom and run in fresh water for several hours before running in the cement.

We have encountered more or less trouble using the cement dump bailer to cement off the Graves sand, which is either caused by a water condition, heat or from the gas or water pressure.

After the cement would set for 5 to 14 days in bailing the casing we would find the water was not shut off, so by running the tools and breaking the top part of the cement we could bail out the balance of the cement which has not set.

By using the cement dump bailer it is much quicker and saves a lot of time and expense handling tubing.

Perforating Casing

There are several different kinds of perforators for perforating casing, but we have been using the common casing ripper. By using a long spear-shaped knife, making the knife as long as possible.

And it appears more satisfactory than using the regular ripper knife and ripping the casing which lets in a lot more sand and cavings.

So far we have had little sand trouble and an ample amount of fluid.

CARL YOUNG SPEAKS

FORT WORTH, Tex., May 2.—There is much more to drilling an oil well than just digging a hole and technical men have made a fine science of the job, the Dallas Technical Club was told by Carl A. Young, secretary of the American Petroleum Institute Division of Production.

"Standardization among various manufacturers has solved the big problem," Mr. Young said. "Ways, means and methods devised by technical men during the last five years have been blamed for overproduction but the same developments in other lines of the industry will be the salvation of the oil situation."

Importance of standardization, particularly of threading of connections in equipment, was stressed and much of the credit for this standardization given to the American Petroleum Institute.

LEGALS

Notice of sale of oil and gas lease, Department of the Interior, United States Land Office, Washington, D. C., April 6, 1931. Notice is given that oil and gas lease under Sec. 17 of the leasing act of February 25, 1920 (41 Stat. 437) on the following described land in Oklahoma County, Oklahoma, is offered for sale at the royalty rates and in accordance with the drilling requirements fixed in the standard lease form, copy of which may be procured from the Commissioner of the General Land Office: T. 12 N., R. 3 W., Sec. 35, Lot 8, containing 0.56 acre as shown upon the township plat approved September 23, 1873; including all Government rights to the accretions appurtenant thereto, and riparian rights within the abandoned bed of the North Fork of the Canadian River extending to the medial line thereof, but not beyond the position of the original left bank of said river, amounting to 0.66 acre; and subject to the right of way of the county highway known as East Reno Avenue; the whole being more particularly described as follows: Beginning at the point for the meander corner on the original right bank of the river on the south boundary of Sec. 35, T. 12 N., R. 3 W., on the center line of East Reno Avenue, from which point of beginning the point for the cor. of Secs. 1, 2, 35, and 36, located at the intersection of the center lines of East Reno Avenue and Eastern Avenue bears S.89°57'30"E., 1.39 chs., distant; thence from said point of beginning, by metes and bounds (1) N.46°00' E., 1.12 chs., to the medial line of the abandoned channel; (2) thence along the medial line N.44°00'W., 1.05 chs., to the position of the original left bank; (3) thence along the alinement of the original left bank N.71°30' W., 1.84 chs.; (4) thence S.76°30'W., 2.73 chs.; (5) thence S. 67°15'W., 2.85 chs., to the medial line of the abandoned channel; (6) thence along the medial line, S.6°00'E., 0.37 chs. to the south boundary of Sec. 35 and center line of East Reno Avenue; (7) thence along the line between Secs. 2 and 35, and on the center line of East Reno Avenue, S.89°57'30"E., 0.90 chs., to the point for the meander corner on the original right bank, and 6.91 chs., to the place of beginning. Said tract will be leased to the responsible qualified bidder offering the highest cash bonus for a lease at the prescribed royalty. The successful bidder, when so notified, will be required to deposit cash, or certified check on a solvent bank, for one-fourth of his bid and pay the remaining three-fourths upon issuance of lease. Any lease issued will be subject to the act approved March 4, 1931 (Pub. No. 853), amending Secs. 17 and 27 of the General Leasing Act of February 25, 1920 (41 Stat. 437). Sealed bids will be received in the office of the Secretary of the Interior up to 10:00 A.M., May 11, 1931. Bidders are warned against violation of the provisions of Sec. 59, U. S. Criminal Code, approved March 4, 1909, prohibiting any unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. C. C. Moore, Commissioner.

Sale of oil and gas leases. Department of the Interior, United States Land Office, Las Cruces, New Mexico. Notice is hereby given that the following described land in Eddy County, New Mexico, is offered for lease under Section 17 of the act of February 25, 1920 (41 Stat. 437), at the customary royalty schedule in the standard lease form, and subject to the following conditions: 1. Unit No. 1: T. 18 S., R. 27 E., N.M.P.M.—Sec. 8, NE¼, NE¼ NW¼—200 acres. 2. The lessee shall agree to unite with others in adopting and operating under a cooperative or unit plan of development or operation of said field whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest, and 3. The lessor consents that, if the oil and gas resources of said land can be recovered adequately by means of wells drilled, or to be drilled on adjacent lands, in lieu of drilling and producing wells on the leasehold, the lessee may pay a sum estimated to reimburse the United States for current loss of royalty, such sum, unless determined under a cooperative or unit plan of operation approved by the Secretary of the Interior, to be fixed monthly by the supervisor of oil and gas operations, subject to approval by the Secretary of the Interior whose decision shall be final. Said lease will be offered for sale at public auction in the United States Land Office, Las Cruces, New Mexico, at 10 O'clock A.M. on May 23, 1931, to the highest qualified bidder on the terms specified. The successful bidder must deposit on the date of sale with the officer in charge of the sale, a certified check on a solvent bank, or cash, for one-fifth of the amount bid by him and file the showing of qualifications to receive a lease required by Section 15 of the said regulations. Bidders are warned against violations of the provisions of Section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. (Signed) V. B. May, Register.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 41)

RAY COUNTY

Wilwright Gas Co.'s No. 1 Wildegrube, NE SW Sec. 14-27-1 ..... Shut down 4,055 ft.
Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.
Peters & Buckles' No. 1 Hayes, NW NE NW Sec. 24-28-3 ..... Shut down 3,295 ft.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... Shut down 3,575 ft.
Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w ..... Rig on ground.
Boucher Oil Co.'s No. 1 Jefferson, NE SW Sec. 32-26-1w .. Drlg. 4,516 ft.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w ..... Drlg. 150 ft.

LATIMER COUNTY

Choctaw Gas' No. 1 Weaver, C NE NW Sec. 4-6-18 ..... Shut down 3,475 ft.
P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... Drlg. 1,580 ft.
Leflore Oil Co.'s No. 1 McBee, NW cor. Sec. 3-7-21 ..... Abandoned 3,601 ft.

LINCOLN COUNTY

Mote-Wheeler's No. 1 Stafford, NW NE Sec. 32-17-4 .... Drlg. 4,310 ft.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Fishing 5,687 ft.

MUSKOGEE COUNTY

H. E. Dowd's No. 1 Hembree, C NW NE Sec. 23-10-19 ... Spudding.
I. T. I. O.'s No. 1 Unknown, C SW NE Sec. 23-11-21 ... Sand 1,810-15 ft.
Rebold's No. 1 Miller, SE NE NE Sec. 32-13-19 ..... Rig.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.

OKFUSKEE COUNTY

E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10 .. Shut down 3,690 ft.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-3w ..... Shut down 1,200 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w ..... Shut down 5,515 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE NW SE Sec. 17-12-4w ..... Shut down 6,700 ft.

PAWNEE COUNTY

Comar's No. 1 Babstick, SW SE SE Sec. 18-22-5 ..... Rig.
Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... Shut down 1,950 ft.
Sperry et al's No. 1 Mullrap, SE SW Sec. 2-22-5 ..... Shut down 1,740 ft.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .... Rig.

PITTSBURG COUNTY

Red Bank's No. 1 Campbell, C NW Sec. 6-6-14 ..... T. D. 758 ft.; abnd.
J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

POTTAWATOMIE COUNTY

Droppleman et al's No. 1 Jones, SE NW Sec. 21-8-3 .... Drlg. 4,500 ft.
Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... 20,000,000 ft. gas 5,350-5,400 ft.; total depth 8,539 ft.; shut down; sprayed 50 bbls. gasoline.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... Drlg. 4,100 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Fishing 2,956 ft.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunray, NW SE Sec. 35-5-5 ..... Location.

STEPHENS COUNTY

Ross Southerd's No. 1 McKinney, NE cor. Sec. 25-1-8w .. Shut down 1,062 ft.

WASHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w. Drlg. 1,815 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... Drlg. 825 ft.
Petroleum Holdings, Inc.'s No. 1 Music, NW cor. Sec. 10-9-20w ..... Shut down 280 ft.

WOODWARD COUNTY

Prairie Oil & Gas Co. et al's No. 1 Wilbur, NE cor. NW Sec. 22-23-17w ..... Shut down 7,445 ft.

OKLAHOMA PANHANDLE
TEXAS COUNTY

Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-18.. Drlg. 4,625 ft.
Palo Alto Oil Co.'s No. 1 Graves, NE SW SW Sec. 23-2-18e ..... Spudded; shut down.

SOUTHERN OKLAHOMA
ATOKA COUNTY

Stewart-Howland's No. 1 Howard, NW SE NW Sec. 6-4s-11 ..... Shut down 100 ft.
Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... Shut down 400 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10.. T. D. 650 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... Shut down 714 ft.
Johnson et al's No. 1 Ussery, SE SW SE Sec. 14-16s-7e .. Shut down 485 ft.

COTTON COUNTY

Gilbert-Lowery's No. 1 Harneg, C SE SE Sec. 4-2S-11w .. Abandoned 2,290 ft.

JEFFERSON COUNTY

Chenault et al's No. 1 Grogan, NE SW NW Sec. 23-7s-6w ..... Shut down 1,800 ft.
Smith's No. 1 McCarty, SE NW NE Sec. 18-4s-8w ..... Location.
C. V. Chenault et al's No. 1 Grogan, SW NE SE Sec. 15-7s-6w ..... Location.
Smith's No. 1 M. O. Carty, SE NW NE Sec. 18-4s-8w .... Abandoned 2,667 ft.

LOVE COUNTY

Autry et al's No. 1 Cross, SW NW NW Sec. 26-6-2 ..... Abandoned 530 ft.
Batson & Sterrette's No. 1 Dillard, SE NE NW Sec. 25-6s-3 ..... Show 5 bbls. 1,585-96 ft.; T. D. 4,433 ft.; P. B. to 1,604 ft.

McCURTAIN COUNTY

The Oil Journal's No. 1 Parks, C NE NW Sec. 9-6s-24 .. Rig.
Stewart's No. 1 Patterson, C SE SE Sec. 7-6s-24 ..... T. D. 300 ft.; underreaming.

MARSHALL COUNTY

McCrory et al's No. 1 Little, NW SW Sec. 30-7s-6 ..... Shut down 497 ft.; showing oil.
D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-8s-6 ..... Drlg. 2,050 ft.

STEPHENS COUNTY

Obermyer et al's No. 1 Skelton, NE SW SW Sec. 32-15-7w ..... Shut down 1,582 ft.

GAS PRODUCING AREAS IN TENNESSEE COUNTIES

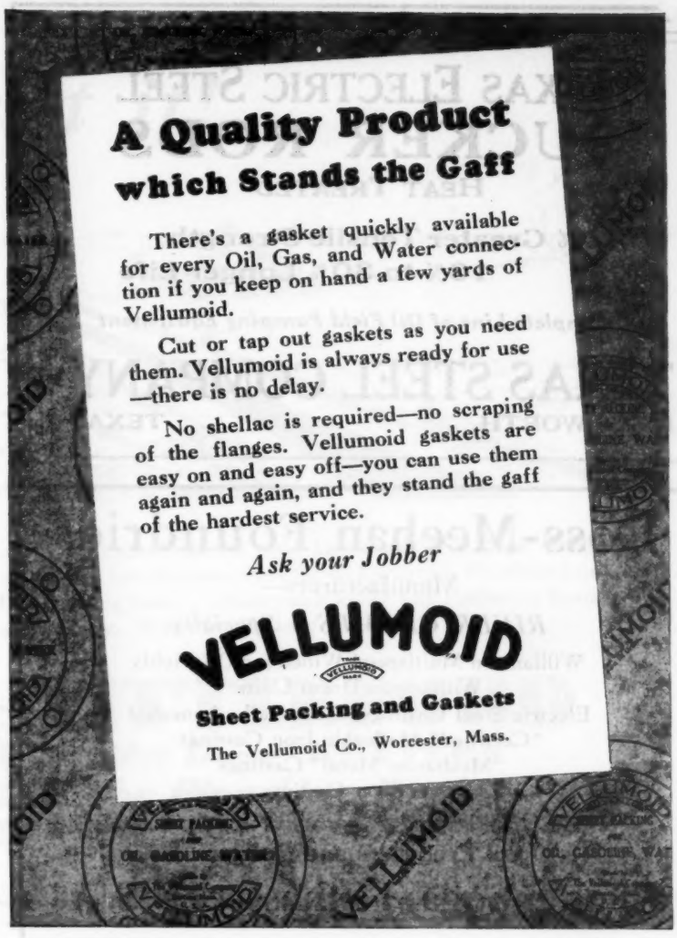
(Continued from Page 90)

ported 155 pounds per square inch; owner, Sparta Gas Co., C. D. Weeks, Hendersonville, N. C., president; R. G. Grady, Wilmington, N. C., manager and secretary; depth of wells, 490 feet and 790 feet; producing horizon, fissured Ordovician (Trenton) limestone; wells reported being connected to 2-inch pipe line to supply Sparta, Tenn. (April 9, 1931).

6. Cookeville Field, Putnam County—Number of producing wells, 4 or 5; wells located 3 miles northwest of Cookeville, near county farm; maximum initial volume, reported 300,000 feet; depth of production, 300 to 500 feet; producing horizon, fissured Ordovician (Trenton) limestone; owner, Carolina-Tennessee Oil & Gas Co., Leon Boney, Cookeville, Tenn., secretary; wells are connected to 2-inch pipe line to supply Cookeville, Tenn.

7. Franklin County Area — Several wells drilled in this general area have encountered considerable gas; initial volumes reported up to 100,000 feet; some of the wells are capped, used locally by the property owners, or plugged and abandoned; wells were drilled by Tennessee Oil & Gas Co., Southern Exploration Co., etc., J. V. McGuire, Tullahoma, Tenn., trustee.

8. Sunbright Field, Morgan County—Area located on Cumberland Plateau, 3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Bids, which must be on prescribed form, will be received by the Director of Supplies, Merchant Fleet Corporation, Room 1713, Navy Building, 19th Street & Constitution Avenue, N. W., Washington, D. C., until 2 p. m., Eastern Standard Time, June 15, 1931. The right is reserved to reject any and all bids. For Sales Proposal S.D. No. 81, terms and conditions of sales, and form of bid, communicate with

DIRECTOR OF SUPPLIES,
UNITED STATES SHIPPING BOARD MERCHANT FLEET CORPORATION
ROOM 1713, NAVY BUILDING, WASHINGTON, D. C.

miles southwest of Sunbright, Morgan County, Tennessee; number of producing wells, 7 or 8; initial volumes measured up to 3,000,000 feet; average initial rock pressure, about 100 pounds per square inch; depth of production 1,100 to 1,400 feet; producing horizon, fissured Mississippian limestone; owners, Benedum-Trees Oil Co., Pittsburgh, Pa., C. L. Jones, Deer Lodge, Tenn., field manager; East Tennessee Oil & Gas Co., Chicago, Ill., W. A. Messer, Sunbright, Tenn., trustee; wells capped, awaiting further development; area is included in Geologic Structure Map of portion of Morgan County, Tennessee, 1930. Also considerable casinghead gas obtained from oil wells in this area, owned by Russell Producing Co., Cincinnati, Ohio, J. C. Amsler, Sunbright, Tenn., superintendent. This gas is consumed in Sunbright and Glenmary, Tenn., 14,500,000 feet reported consumed during 1929.

RE-FORMING NATURAL GAS HAS EFFECTED ECONOMIES

(Continued from Page 90)

operation consisted in partly cracking natural gas in the oil generators and subsequently enriching the re-formed product by the addition of natural gas. When enough natural gas was not available gas oil only was re-formed; the resultant gas was enriched with natural gas. The combination process was unique and seemed well adapted for use under the conditions that prevailed in California.

In several eastern cities a somewhat different condition prevails, which seems to require a different procedure in maintaining the supply of standard city gas. For example, large quantities of coal and coke are available from nearby sources at a fair price; equipment is installed for making coal gas, carbureted water gas, or both; and some natural gas is also available. Not only is a problem presented involving the mixing of gases under such conditions but sometimes it is desirable to crack or re-form at least some of the natural gas. There is a definite demand for a means and process for re-forming hydrocarbon gases, including refinery gas. The report just issued by the Bureau of Mines discusses this general subject with relation to the production of gas suitable for city distribution. The possible recovery of a by-product carbon has also been considered.

Tests made during the course of this investigation by the Bureau of Mines were confined to the re-forming of hydrocarbon gases in the fuel bed of a water-gas generator. Following are the findings:

When the ignited fuel bed is alternately blasted with air and a hydrocarbon gas such as natural gas, the resultant gas is comprised largely of hydrogen, the remainder being essentially methane. Carbon, is entrained in the gas and can be recovered. As much as 8 pounds per 1,000 feet of natural gas treated was recovered.

When ignited fuel is alternately blasted with air and both steam and natural gas in controlled proportions, re-formed gas is produced substantially without entrained carbon. In this process the gas is comprised of carbon monoxide, hydrogen, and a lesser amount of methane. The thermal efficiency and gas-making capacity are higher, generating re-formed gas in this manner, than in making water gas, and the generator fuel used is lower per 1,000 feet of re-formed gas made.

Propane and butane were re-formed in a similar manner by introducing them into the generator simultaneously with the injection of steam; similar results were obtained.

The relative amount of steam required for the fulfillment of the chemical reactions are different for the various hydrocarbon gases.

By using the re-forming process natural gas can be used during periods of off-peak demand in the generation of city gas having a relatively lower calorific value; the re-formed gas thus made, when enriched by the addition thereto of natural gas, will have a composition and a specific gravity comparable with that of city gas manufactured by other standard processes.

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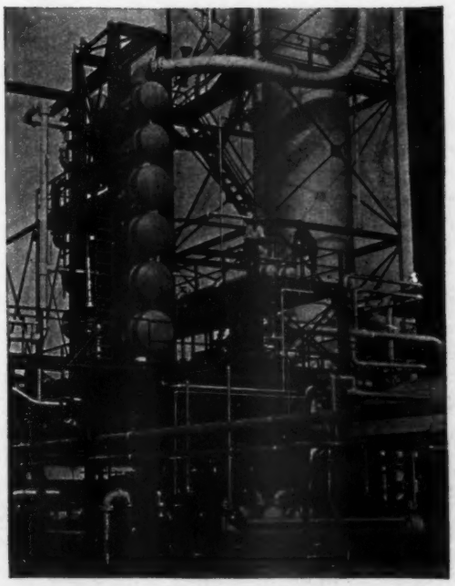

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Report for Month of February

Runs

	Month (bbls.)	Dly. av. (bbls.)
Prairie P. L. Co.*	837,880	31,710
Gulf P. L. Co.	1,196,957	42,749
Texas P. L. Co.	593,142	21,184
Magnolia P. L. Co.	1,511,227	53,972
Empire P. L. Co.	1,675,585	59,842
Cosden P. L. Co.	674,187	24,078
Stanolind P. L. Co.*	2,693,418	96,193
Oklahoma P. L. Co.	2,389,924	85,354
Other lines*	5,516,000	197,000
Total February	17,128,296	612,082
Total March	18,271,263	589,394
Difference	1,132,967	22,688

Shipments

Prairie P. L. Co.†	2,147,670	76,702
Gulf P. L. Co.	1,007,357	35,976
Texas P. L. Co.	981,791	35,064
Magnolia P. L. Co.	1,308,758	46,741
Empire P. L. Co.	1,824,912	65,176
Cosden P. L. Co.	777,082	27,753
Stanolind P. L. Co.†	2,936,612	104,879
Oklahoma P. L. Co.	2,440,712	87,168
Other lines*	5,572,000	199,000
Total February	19,021,890	678,460
Total March	19,602,309	632,331
Difference	580,419	46,129

Stocks

Prairie O. & G. Co.*	37,556,000
Gulf P. L.-Gypsy Oil Co.	9,034,933
The Texas Company	3,950,066
Magnolia Petroleum Co.	6,095,373
Empire P. L. Co.	5,321,385
Mid-Continent Pet. Corp.	3,742,097
Stanolind C. O. Pur. Co.*	18,370,000
Oklahoma P. L. Co.	2,531,264
Carter Oil Co.	9,236,319
Other lines*	22,697,000
Total February	118,434,237
Total March	119,400,561
Difference	966,324

*Estimated. †Prairie and Stanolind shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR MARCH

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for February and March:

	Feb. '31	Mar. '31
Nat. Transit	121,907.94	137,913.13
S. W. Pa. P. L.	66,984.81	73,145.44
Eureka P. L.	271,589.18	294,873.88
Buckeye P. L.: (Macksb'g)	283,050.42	311,712.85
Buckeye P. L.: (Cleveland)	10,192.36	11,769.49
Buckeye P. L.: (Lima, etc.)	78,304.68	79,000.44
Indiana P. L.	3,593.88	3,199.09
Cumberland P. L.	158,426.03	168,106.26
N. Y. Transit	25,972.80	28,392.78
Tide Water P. L.	23,230.37	24,005.40
Pure Oil	188,721.57	212,358.30
Stoll Oil Ref.	25,934.10	32,191.99
Bradford Tran.	286,859.50	307,597.03
Total	1,544,567.64	1,684,271.08
Daily average	55,163.13	54,331.32

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for February and March:

	Feb. '31	Mar. '31
Nat. Transit	434,836.96	565,089.04
S. W. Pa. P. L.	349,431.73	423,661.54
Eureka P. L.	329,203.94	328,329.66
Buckeye P. L.: (Macksburg)	255,836.89	266,351.57
Buckeye P. L.: (Cleveland)	1,708.34	2,440.89
Buckeye P. L.: (Lima, etc.)	1,346,381.03	1,601,658.90
Indiana P. L.	704,037.29	737,337.17
Cumberland P. L.	95,198.73	110,949.07
Southern P. L.	86,948.86	79,090.42
N. Y. Transit	158,600.37	187,287.69
Northern P. L.	159,788.80	177,499.13
Tide Water P. L.	454,444.14	362,962.53
Pure Oil	138,500.91	246,505.63
Bradford Tran.	337,789.39	341,249.76
Tuscarora	335,131.21	443,677.56
East Gulf Oil	.....	1,674.23
Total	5,137,844.59	5,874,764.79
Daily average	183,494.45	189,508.54

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of February and March:

	Feb. '31	Mar. '31
Nat. Transit	623,437.33	745,113.23
S. W. Pa. P. L.	432,681.19	369,483.29
Eureka P. L.	1,599,276.50	1,819,344.51
Buckeye P. L.: (Macksburg)	592,937.82	565,767.95
Buckeye P. L.: (Cleveland)	38,449.28	49,352.24
Buckeye P. L.: (Lima, etc.)	4,308,481.54	3,619,980.13
Indiana P. L.	546,697.37	611,627.34
Cumberland P. L.	645,138.76	652,425.69
Southern P. L.	323,636.70	270,576.36
N. Y. Transit	120,111.18	148,013.40
Northern P. L.	325,464.55	342,330.93
Tide Water P. L.	944,684.28	1,030,157.40
Pure Oil	649,860.39	625,831.52
Tuscarora	13,749.38	13,347.56
Brad. Trans.	141,883.72	143,165.00
East Gulf Oil	.....	4,647.01
Total	11,506,489.99	11,012,162.56
Decrease	324,602.91	494,327.43

Grades of Oil

The following table shows the amount of the different grades of oil held by eastern pipe lines at the close of February and March, showing gross stocks of the above fields:

	Feb. '31	Mar. '31
Pennsylvania	3,844,013.10	3,847,629.68
Lima	804,771.54	791,559.81
Kentucky	655,160.44	667,373.91
Mid-Continent	5,564,627.27	5,090,403.32
Michigan	637,917.64	615,196.34
Total	11,506,489.99	11,012,162.56

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
January	52,904	51,749	75,907	53,939
February	57,002	51,833	79,256	55,163
March	57,485	54,252	76,688	54,331
April	56,812	58,444	84,536	.....
May	62,067	59,902	80,548	.....
June	58,230	58,823	75,420	.....
July	57,144	66,087	68,921	.....
August	57,745	66,087	54,291	.....
September	53,487	67,315	56,595	.....
October	58,100	76,093	58,179	.....
November	53,865	74,831	52,332	.....
December	52,025	74,561	53,999	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
January	146,465	165,721	217,623	175,369
February	167,368	159,387	224,355	183,494
March	158,883	161,474	228,846	189,508
April	172,935	169,737	241,845	.....
May	180,559	184,281	248,383	.....
June	188,024	185,404	234,401	.....
July	189,470	194,763	207,094	.....
August	192,853	194,946	205,506	.....
September	194,138	201,214	183,999	.....
October	176,000	191,367	157,675	.....
November	176,898	202,743	146,638	.....
December	173,572	186,257	143,001	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1929	1930	1931
January	7,596,564	12,220,045	11,831,092
February	8,738,835	12,991,561	11,506,489
March	9,002,058	13,247,217	11,012,162
April	8,978,172	13,233,961	.....
May	8,903,560	13,052,953	.....
June	8,921,275	13,396,855	.....
July	9,211,595	13,268,562	.....
August	9,440,643	13,047,951	.....
September	9,442,067	12,812,018	.....
October	9,441,101	12,437,555	.....
November	9,868,538	11,851,380	.....
December	11,253,953	11,751,952	.....

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, April 1	2,834,608.40
Runs from wells	400,632.83
Other receipts	308,484.64
Regular deliveries	332,657.86
Other deliveries	188,220.28

The amount of Illinois oil run by the Tide Water Pipe Co. in March was 24,005.40 bbls. Deliveries were 24,005.40 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1931—	Runs	Deliveries
March	424,638.23	356,663.26
1930—		
January	543,387.95	498,293.93
February	548,416.33	414,536.59
March	631,944.49	469,119.53
April	530,074.22	509,304.60
May	605,147.27	504,069.84
June	572,662.57	468,658.81
July	604,529.54	388,454.47
August	594,642.12	375,742.43
September	457,001.11	371,691.63
October	478,442.12	320,688.73
November	422,794.63	355,403.12
December	556,418.78	363,719.55
1931—		
January	468,429.04	669,573.19
February	429,284.54	461,262.85

Tide Water Pipe Co., Ltd., also delivered in March 175,613.44 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
April	7,767	.....	14,369	11,600	7,433	41,167	.....	.....	.....	.....	7,600	48,767
May	5,194	5,451	28,161	9,484	2,774	54,064	.....	.....	.....	.....	774	54,838
June	3,300	.....	33,933	20,767	2,333	65,333	.....	.....	.....	.....	2,400	67,733
July	17,355	7,774	43,419	23,839	6,452	98,839	.....	.....	.....	.....	4,645	103,484
August	7,418	5,742	38,968	21,226	5,258	81,613	.....	.....	.....	.....	97	81,710
September	6,300	6,400	25,600	13,400	9,567	61,267	.....	.....	.....	.....	2,433	63,700
October	2,516	3,065	27,258	16,419	4,903	54,161	.....	.....	.....	.....	5,355	59,516
November	3,367	6,233	33,800	17,733	4,600	70,733	.....	.....	.....	.....	4,800	75,533
December	5,516	4,323	30,645	9,678	3,580	53,742	.....	.....	.....	.....	4,645	58,387
January	3,287	6,613	21,948	14,678	11,096	57,742	....	.....	.....	.....	6,129	63,871
February	5,757	2,713	29,143	4,000	5,750	47,393	.....	.....	.....	.....	3,750	51,143
March	10,032	1,611	21,388	7,324	8,774	49,129	.....	.....	.....	.....	6,355	55,484

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
April	31,400	8,933	123,500	40,433	19,434	223,700	.....	7,400	2,433	4,167	14,000	237,700
May	24,129	9,322	174,194	39,291	28,226	275,161	8,194	11,548	2,935	1,322	24,000	299,161
June	51,533	15,667	121,067	45,033	25,033	258,333	4,413	17,367	2,167	1,333	25,300	283,633
July	42,097	9,548	154,968	37,935	36,032	280,580	5,678	9,161	2,097	2,387	19,323	299,903
August	39,032	4,484	145,613	33,355	25,097	247,581	8,419	9,323	8,548	3,000	29,290	276,871
September	38,567	8,533	150,933	34,500	25,567	258,400	6,433	12,234	.....	3,800	22,467	280,867
October	19,839	11,742	146,194	35,355	26,967	240,097	6,065	7,067	2,774	2,545	18,451	258,548
November	39,633	35,900	124,633	36,467	24,667	261,300	2,467	7,366	.....	1,767	11,600	272,900
December	21,419	14,033	122,774	32,839	33,774	224,839	6,290	10,613	2,097	290	19,290	244,129
January	17,613	13,519	154,225	32,902	30,612	248,871	2,032	11,677	2,097	3,097	18,903	267,774
February	31,321	16,929	127,786	31,714	26,857	234,607	4,536	11,571	.....	536	16,643	251,250
March	27,645	18,935	141,180	26,790	21,129	238,161	4,065	2,580	.....	1,968	8,613	246,774

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1930—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
March:	Month	19,699,979	19,115,406	25,503,082	3,504,395	1,817,871	1,942,938	2,337,028	4,223,000	78,143,699
	Daily average	635,483	616,626	822,679	113,045	58,641	62,675	75,388	136,161	2,520,764
April:	Month	18,768,743	19,541,310	24,799,763	3,734,353	1,724,460	1,909,552	2,334,810	4,257,000	77,069,891
	Daily average	625,625	651,377	826,659	124,475	57,482	63,652	77,827	141,900	2,568,996
May:	Month	19,044,444	20,587,803	26,219,488	3,978,385	1,659,895	1,907,482	2,565,219	4,414,000	80,376,776
	Daily average	614,337	664,113	845,786	128,335	53,545	61,532	82,749	142,387	2,592,799
June:	Month	18,030,795	19,754,709	25,643,705	3,765,060	1,704,060	1,935,621	2,519,190	4,288,000	77,621,131
	Daily average	600,693	658,490	854,790	125,502	56,802	64,187	83,973	142,933	2,587,371
July:	Month	18,802,024	18,032,514	25,973,521	3,541,409	1,713,680	2,079,769	2,375,894	3,820,000	77,248,811
	Daily average	606,517	581,694	857,856	114,239	55,280	67,089	105,674	123,548	2,491,897
August:	Month	18,770,466	17,162,034	25,969,598	3,491,530	1,700,102	2,161,120	3,193,341	3,417,000	74,956,191
	Daily average	605,499	553,614	838,696	112,630	54,842	69,391	103,011	110,226	2,417,909
September:	Month	17,984,306	16,509,120	23,111,822	3,405,510	1,583,280	2,008,060	3,239,010	3,396,000	71,237,108
	Daily average	599,477	550,304	770,394	113,517	52,776	66,935	107,967	113,200	2,374,570
October:	Month	18,244,053	16,632,523	23,626,553	3,571,913	1,636,552	2,142,535	3,325,550	3,627,000	72,707,029
	Daily average	588,518	536,533	762,147	115,223	52,792	69,136	104,950	117,000	2,346,384
November:	Month	18,109,459	14,941,770	22,035,222	3,459,330	1,557,870	2,136,948	2,957,100	3,232,000	68,419,699
	Daily average	603,648	498,059	734,507	115,311	51,929	71,231	98,570	107,400	2,280,656
December:	Month	17,786,728	15,057,103	21,810,359	3,432,661	1,590,951	2,157,584	3,118,663	3,328,000	68,281,999
	Daily average	573,765	485,713	703,560	110,731	51,321	69,598	100,602	107,355	2,202,646
1931—										
January:	Month	16,485,798	14,850,953	20,690,452	3,149,073	1,574,955	2,131,937	2,966,142	3,374,000	65,223,310
	Daily average	531,799	479,063	667,434	101,583	50,805	68,772	95,682	108,839	2,102,978
February:	Month	14,930,932	13,371,876	18,964,596	3,369,016	1,402,492	1,981,476	2,747,024	3,129,000	59,896,412
	Daily average	533,248	477,567	677,307	120,322	50,089	70,767	98,108	111,750	2,139,158
Total 12 months		216,647,727	205,556,812	283,448,161	42,402,535	19,666,168	24,475,682	34,478,971	44,505,000	871,181,056